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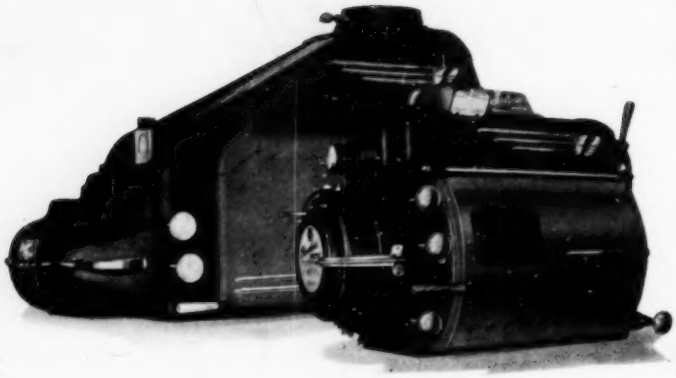

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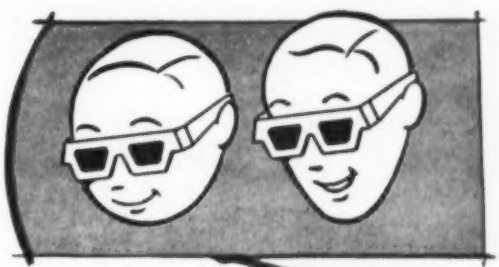

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INTERNATIONAL PROJECTIONIST

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FREDERICK HODGSON, *Editor*

JAMES MORRIS, *Associate Editor*

Volume 28 — *DECEMBER 1953* — *Number 12*

Index and Monthly Chat 5

Recent Projection Advances in Europe 7
ROBERT A. MITCHELL

Film Splicing for 3-D and CinemaScope 11
JAMES MORRIS

Two Views on CinemaScope .. 15

Small Theatres Install Stereo-sound 15
L. D. NETTER, JR.

Boxoffice TV Tested on Coast 16

In The Spotlight 19

RCA's Magnetic Movies Portend New Industry Revolution .. 22
FREDERICK HODGSON

What's Your Problem 26

New Products for the Industry 27

Single Strip 3-D To Get Circuit Tests 28

An Improved Carbon Lamp for 3-D and Wide Screen .. 29
DR. EDGAR GRETENER

Personal Notes 35

Projection, Military Arcs Use Discs 36

Panaphonic System is Shown on Coast 37

Bell & Howell Make 'Scope Lenses 38

Fibreglas Reels May Solve Weight Problem 39

IA Election 39

Obituaries 42

News Notes

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9

MONTHLY CHAT

THE late Heywood Broun once described the merry Christmas season as a time of "peace on earth, good will towards men and the bashing in of heads." Broun's phrase might apply to the state of the motion picture industry as we move from 1953, the year of technological revolution, into the fateful year of 1954.

Peace on earth there may not be, but indubitably the air is filled with good will of a sort. There is a slight relaxation in the industry's favorite pastime, the bashing in of heads. Even Spyros Skouras has announced willingness to test CinemaScope with standard one-track sound. This is a handsome Christmas present for those small exhibitors who must play Fox pictures to live but who cannot afford expensive stereophonic equipment. If we do not applaud too loudly it is because we think directional sound, properly handled, is a distinct advantage in the presentation of some motion pictures.

Over the months of 1953 this magazine hasn't been too kind to 20th Century-Fox. For being unkind, we apologize. For being truthful, as we see the truth, we offer no apologies. We admit that we view Spyros Skouras with a mixture of awe, admiration and a gnashing of teeth. During the year just ending we have watched him challenge the industry, dare it to oppose him. And we have seen him win.

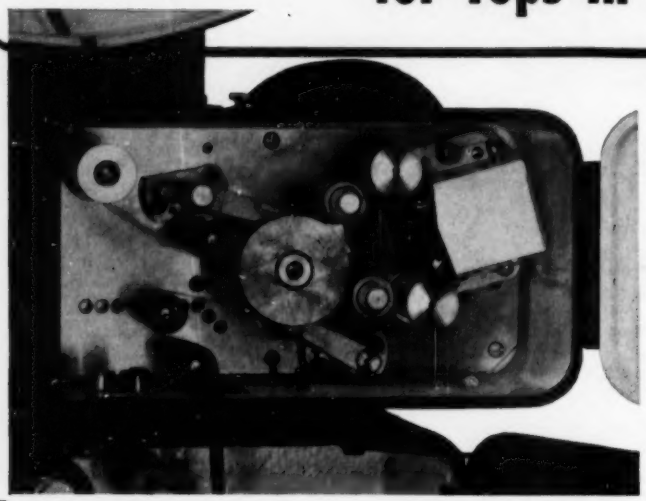
In all of this titanic struggle the projectionist hasn't been on the sidelines. He's been in the thick of it, wrestling with problems not of his own making. He's put on a good show in spite of strange new equipment and in spite of a deliberate policy in some quarters to keep him in the dark about new processes and techniques. It will be the task of IP to keep projectionists informed, not only about new things in the industry but how to handle these new things as well.

The 3-D picture is somewhat different, a little less explosive — and a bit more sombre. Here everything possible is being done to bring every scrap of knowledge to the man in the projection room. For this policy, adopted by the Polaroid people and emulated by Pola-Lite, we are grateful.

The portents for the industry in 1954 (and after) are discussed elsewhere in this issue of *International Projectionist*. We sincerely hope it will be a good year. We hope it will be a happy year, and we hope that every reader of IP will have the merriest Christmas ever.

And may 1954 be "in sync" and without any show stops for anybody.

Available Now! NEW Westrex "pent-house" Reproducer for Tops in Stereophonic Sound!



For theatres outside U. S. A. and Canada and for studios everywhere

Westrex R9 Stereophonic Reproducer — *This front view shows the easy threading features, the tight loop essential for quality reproduction, the magnetic head (upper right), the 32-tooth sprocket and associated film pads which, when lifted, lock the sprocket for accurate threading, and the various idler roller positions which match the lengths of film paths in different makes of projectors.*

The Westrex R9 Stereophonic Reproducer scans four magnetic tracks from a composite print and is the simplest, most economical way to reproduce stereophonic sound at its best.

The R9 reproducer is designed for use with standard theatre equipment without replacing or making obsolete any modern projector or sound head. It is also useful in studios for re-recording, electrical printing, and preview room purposes.

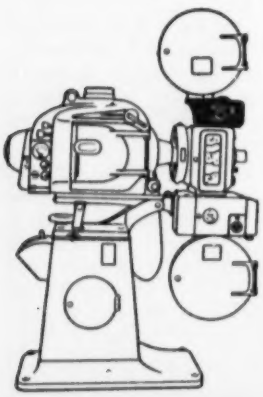
The R9, which is a film pulled mechanism, requires no special motor or drive. The 4-track magnetic head may be replaced by a 3-track, 5-track, or any other kind of magnetic head.

When the stereophonic features of the R9 are not in use, they are by-passed in threading the film through to the photographic sound head.

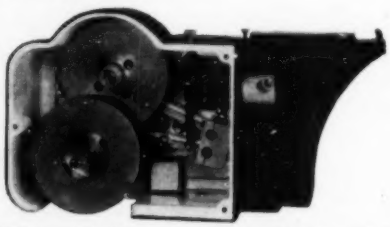
This reproducer employs the well-known Davis drive and flutter suppressor with two impedance drums, which result in a total flutter performance of below .10% in the low frequency rates ordinarily perceived by listeners and below the Academy standard of .15% for all frequency rates.

This unit requires no special lubrication or maintenance as the rollers and impedance drums are equipped with ball bearings.

The R9 — like the quality Westrex amplifying equipment and loudspeaker systems—is distributed by 64 Westrex offices in 36 countries.



Westrex R9 Stereophonic Reproducer *installed between the upper magazine and the projector mechanism. It measures only 6¾" in height, 13" in width, and 6¾" in depth.*



Westrex R9 Stereophonic Reproducer—*The rear view shows the two fly-wheels, the flutter suppressor mechanism, and the output terminals for the magnetic tracks.*

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Season's Greetings

VOLUME XXVIII DECEMBER 1953 NUMBER 12

This Is the First of Two Articles Covering --

Recent Projection Advances in Europe

European developments, from the CinemaScope anamorphic lens to single strip 3-D are revolutionizing American films: Here Mr. Mitchell looks at projection overseas

by ROBERT A. MITCHELL

THE FACT that European projection and sound apparatus has been developed to a very high order of perfection is often overlooked in the United States because American projectionists find little opportunity to become acquainted with such equipment. The prevalent American notion that European projectors are "primitive," "crude," or "cheaply constructed" is regarded with utter amazement by projectionists in other parts of the world.

No one would seriously maintain that top-quality American projectors do not compare favorably with the leading European machines; but it is equally absurd to deny the undisputed world-wide popularity of the better foreign projectors.

Such American projectors as the Brenkert, Century, Motiograph, Simplex and others are favorably known the world around for excellent operating characteristics and durability. So also are the German Bauer, Ernemann, and Euro, the British Kalee, and the Dutch Philips.

All of these, American and European, are among the best projection machines in the world, and each, without exception, possesses specific features superior to the corresponding features of other machines.

Each Has Features

So while American projection and sound equipment has its own unique features and advantages, European equipment also holds considerable interest for the projectionist, no matter what his nationality. Projection, as indicated by the name of this magazine, is *international* in scope and character

It is curious, but true, that many of the startling "innovations" now bursting on the American screen had their genesis abroad. Henri Chretien's anamorphic lens, as an instance, was born in France and the idea was imported by 20th Century-Fox for CinemaScope. Engineers imported from Austria are now in this country working on various "beam splitter" devices for the showing of single-film 3-D. An example of this is the Moropticon system discussed elsewhere in this issue of IP. It is entirely possible, therefore, that European projection machines (as in the case of the powerful Ventarc lamp developed in Switzerland by Dr. Edgar Gretener and brought to New York by Mr. Earl Sponable, of Fox) may have something to give American projector manufacturers in the future.

Comparisons Have Value

Comparisons may often possess considerable objective value. Most American projectors, for instance, consist of separate picture and sound "heads," often made by different manufacturers, while most European machines now utilize unit construction of the picture and sound-reproducing components. All American mechanisms

are nowadays enclosed, while the European, except several British mechanisms and the Dutch Philips, are open. The Philips enclosure is, however, removable, thus permitting operation of the machine as an open projector. The same thing can be done with the American Simplex Regular mechanism.

American Projectors

In America, with the single exception of the Motiograph, which has a rear cylindrical shutter like the European machines, disc and conical shutters are employed, the former often being very large and assuming grotesque forms of rear-and-front combinations which nearly conceal the mechanism. With the exception of the Simplex X-L, which has 24-tooth feed and holdback sprockets, American projectors have 16-tooth upper and lower sprockets, most European machines 32-tooth uppers and lowers. Most American soundheads have two sprockets, but the most widely used European sound reproducers have no sprockets at all.

American projector mechanisms, by and large, are patterned after the old Simplex Regular, an inexpensive machine which quickly gained widespread acceptance because of its simplicity and dependability. Although inclined to be noisy, it had a number of features which were distinct advances in projection technology. The Super Simplex is an improved version of the original Simplex — many of their parts are directly interchangeable, — and even the newer Models E-7 and X-L, having modified gearing, retain the time-tried basic arrangement of sprockets and film gate.

The Century, Ace, Superior, and Wenzel, among others, are direct descendants of prolific Daddy Simplex. The Brenkert and DeVry also have the same film path, as does the Motiograph AA, which represents a radical departure from the earlier and quite differently constructed Motiograph models.

The Simplex Regular was itself developed from the Edengraph, and first appeared commercially in 1911. In its triumphant march to conquer the American projection field, it defeated the Edison Kinetoscope and, later, the Powers, old-time American projectors of very un-Simplex-like construction. We therefore feel justified in regarding the basic Simplex design as the American "ideal," or standard, design.

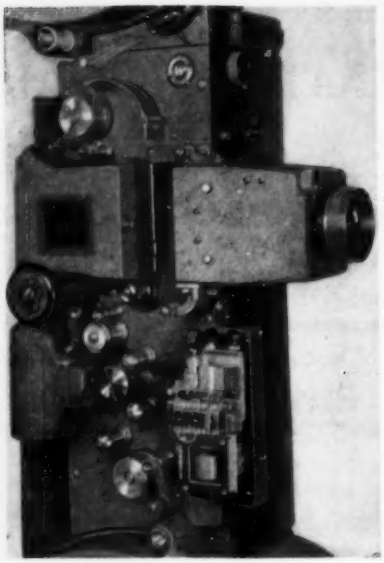

FIG. 1. The Ernemann IX sound projector with Ikosol II lamp. Note the simple, open construction of this sturdy theatre machine which closely resembles the water-cooled Ernemann X.

Variety in Europe

Although Europe produces a wider variety of projectors than does the United States, a somewhat analogous development has taken place there. The most satisfactory and widely used projector, the German Ernemann, attained the position of European standard at an early date. This machine was derived from Alexander Ernemann's Imperator, placed on the market in 1909. From the Imperator came the automatically lubricated Ernemann II, and subsequently the Models III, IV, V, VII-B, IX and X in addition to a number of special projectors for single-strip 3-D, 65-mm. film, oblique projection, etc.

The Ernemann III was built in the early 1920's with a large lens mount for F/1.9 projection lenses and a cylindrical rear shutter located close to the film-gate aperture where the cone of light is most constricted. The Model IV, appearing in 1934, was the first Ernemann to have the sound reproducer built into the projector mechanism. The V, a variant of the IV having a water-cooled gate casting, is the first in a succession of famous "cold projectors." The VII-B was the last machine made by Ernemann before the war. But a few years after hostilities had ceased, the new and improved Models X and IX (the latter being a simplified and less expensive version of the former) were designed and produced under the personal direction of Dr. Ernemann at the new factory in Kiel, the X appearing in the spring of 1950, and the IX one year later. Lest there be confusion because the Ernemann X predates model IX, the latter model was a less expensive edition of the former, essentially the same machine but minus some of the gadgets to be found on the Ernemann X.

Made in Western Zone

The Ernemann Projector Works is a subsidiary of Zeiss Ikon AG., Stuttgart, no longer connected with Zeiss Ikon VEB., Dresden, or with the firm of Carl Zeiss, Jena, both of which are in the Soviet-occupied zone.

The Ernemann IX fitted with the Zeiss Ikon Ikosol II arc-lamp is shown in Fig. 1. The Model X is similar in appearance.

The general plan of the earlier Ernemann models has influenced the design of the Bauer and Euro, two other famous German projectors. The British Walturdaw V is an almost exact copy of the Ernemann V, while the Swedish Aga and the Italian Mikroteknika are among many other projectors giving evidence of dependence on the Ernemann pattern. The Ernemann VII-B is still being manufactured, after a fashion, in Soviet-occupied Germany; and several Russian machines are "Chinese copies" of various earlier Ernemann models.

To repeat: the basic Simplex design is the American standard, the basic Ernemann design is the norm for continental Europe and Asia. English projector designers, influenced by both the American and German norms, have borrowed features from both, showing a preference for the German.

Projectors "Open"

The open construction of the Ernemann is, as we have mentioned, a European characteristic. Now, many American projectionists are prone to regard the open construction as a relic of the paleolithic age; but the fact remains that most European projectors are made that way because the majority of European projectionists prefer open mechanisms, considering

(Continued on page 32)

A New Look for the New Movies...

Wide-Screen and 3-D Projection Lighting

The film industry is currently being revitalized by the third great technical revolution in its history. First, sound; then color; now panoramic and tri-dimensional realism are having their profound effect on movie-making and showing techniques.

Record Sums Spent

Exhibitors in the race to equip themselves for these new box-office bonanzas are spending thousands and tens of thousands of dollars on new optics, screens, sound equipment. Where does screen *lighting* equipment fit into this picture of modernization?

Light Losses Serious Problem

In wide-screen projection, screen light is distributed over 2½ *times the area* of conventional screens. In 3-D systems, filters reduce the total screen light to about *half* its former value, even with *two* projectors trained on a new screen of much higher reflectivity. Both wide-screen and stereoscopic effects suffer serious handicaps from inadequate lighting; nothing short of a *major* improvement in your present lighting equipment will enable you to take full advantage of their terrific mass appeal.

New Equipment Needed

For these new screen media you need not only *much more* light . . . you need literally *all the light you can get!* This means new equipment —equipment to operate the higher-capacity carbons at maximum currents.

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Film Splicing for 3-D and CinemaScope

by JAMES MORRIS

MAKING a good splice always has been an extremely important part of the projectionist's job, doubly important now because of the advent of CinemaScope and the resurrection of 3-D.

A bad splice in either 3-D or CinemaScope can not only cause a stop but it can do a beautiful job of lousing up the show even without a stop. Contributing to splicing difficulties is the use of acetate, or safety, film which is more difficult to handle in a splicer than was the now out-moded nitrate film.

Today, according to film manufacturers, nitrate film constitutes but a fraction of all prints exhibited in American theatres. Some place this fraction as low as one percent. Importation of nitrate film is permitted and art houses sometimes receive such prints from Europe. Too, revivals of old pictures sometimes puts nitrate prints into theatres. Film libraries, with their stocks of old pictures, still rent nitrate prints both in 35-mm and in 16-mm. Most of the films in the famous library of the Museum of Modern Art in New York are nitrate, although the museum has plans for new prints of these old pictures using acetate.

Difficult to Splice

However, despite the fact that triacetate film has eliminated the possibly lethal consequences of a bad splice, the projectionist's worries, so far as splicing is concerned, are by no means ended. The new processes have brought new problems.

Triacetate, or so-called safety film, has a number of advantages that stem from the fact that it is more stable chemically than a nitrate base. The most important advantage is its flame-resistant quality. It burns slowly and without dangerous fumes. Also, because it is more stable than nitrate, it has less tendency to shrink out of size. But this chemical stability has one important disadvantage from the projectionist's point of view. Triacetate base, or acetate, as it is usually referred to, is harder to splice. Its very stability slows down the disolving action of the solvent cement and makes necessary greater care if the best results are to be obtained.

No Real Difficulties

The latest problem concerns splicing the new CinemaScope film with its four magnetic sound tracks and narrower sprocket holes. The magnetic tracks are on the opposite side of the film from the emulsion. Another persistant and annoying problem concerns making a splice on one or both of the two film strips required for 3-D projection. This article is intended to review the whole process of splicing with special mention of CinemaScope and 3-D film.

Provided he has the proper equipment, splicing of CinemaScope film will present no difficulties to the projectionist. A splicer such as the recently marketed Neuscope model is especially designed for the job. It is constructed so that both the emulsion side of the film and the base side, to which the magnetic tracks adhere, can both be scraped clean while the two ends to be joined are clamped in the jaws of the splicer. The register pins of the Neuscope are smaller and set in a slightly different position to conform to CinemaScope specifications. The standard 35-mm sprocket perforation is 0.11" as against the narrower 0.078" perforation for CinemaScope.

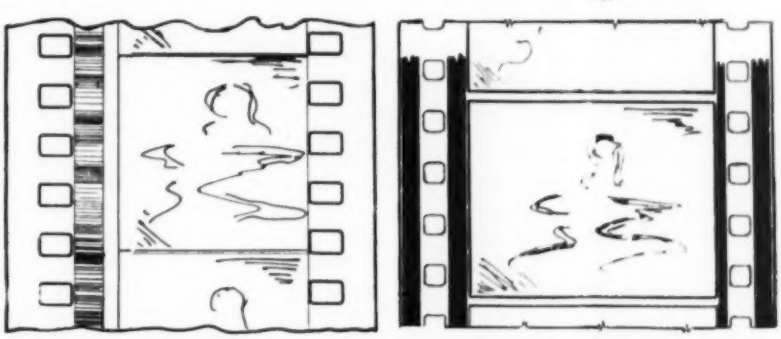
If a standard splicer is converted for use with CinemaScope film, it is first necessary to file the pins until they are narrow enough and in the correct position to be received by the CinemaScope sprocket holes. This is the way the problem was handled by some Fox exchanges on the first prints to be processed. This is not an entirely satisfactory method because if the pins are filed to CinemaScope tolerance, there will be a loose fit and lateral shifting if these pins are later used to register the sprocket holes of standard film.

Using a converted standard splicer for CinemaScope film presents another problem. After the edges of the film have been trimmed for the splice, it is then necessary to remove the film from the jaws, taking the end from which the magnetic tracks are to be scraped from the right jaw and placing it in the left where the tracks can be scraped from the splice area. Then the two ends are returned to their original position and the splice is completed.

Procedure Is Clumsy

This procedure has the disadvantage of being clumsy in addition to the fact that a better splice is likely to result if the film is kept locked in one position throughout the operation.

There is much to be said for a special splicer for CinemaScope film such as the Neuscope model, manufactured by Griswold and distributed nationally by the Neumade Products Corp. The problem of removing the film from the jaws in the middle of the operation is solved by redesigning the right-hand



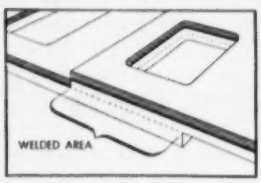
The two drawings shown above illustrate the different sprocket-hole proportions of CinemaScope and standard film. The CinemaScope sprocket holes, shown in the sketch at the right are set between the magnetic tracks, and do not line up exactly with standard sprocket holes. Also the magnetic tracks on CinemaScope film are on the base side rather than the emulsion side of the film. This creates problems in splicing which are explained in the accompanying article.

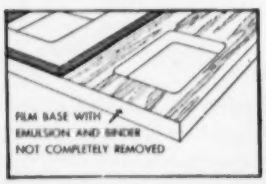
Here are two examples of bad splicing that resulted from excessive scraping and excessive use of cement which weakened the film.

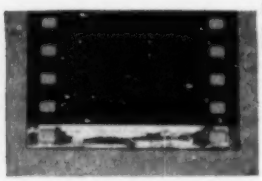
pressure spring assembly and cutting blade so that a support bar for scraping the base side of the film could be built into the right jaw as well as the left. Use of a fine wire brush, also supplied by Neumade, is advised to condition the splice area when this type of splicer is used. According to Bob Hempel, of Neumade, the brush strokes create fine ridges and depressions which absorb the cement and prevent splashing which might otherwise occur. Hempel also states that the brush is valuable in removing the magnetic tracks completely from the sprocket hole area without damaging the film, a slightly tricky operation. The brush is used after first scraping with a blade.

AREA TO BE WELDED
THIS AREA MUST BE PREPARED IN ORDER TO MAKE A WELD—ALL EMULSION AND BINDER MUST BE REMOVED
THIS IS THE FILM END TO BE WELDED TO THE PREPARED END BELOW—ITS UNDER SURFACE MUST BE CLEAN

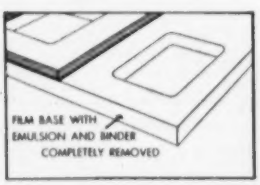
Good splicing requires effective but not excessive scraping. Both the emulsion and the layer that binds the emulsion to the base must be removed to expose the base for the weld.







Here are two illustrations that show how traces of emulsion and binder remain on a badly prepared splice area. The picture below shows how it appears to the eye.



Good scraping, properly done is shown at top. The drawing shows a completely clean base with emulsion and binder removed. The bottom picture shows how the scraped film will appear.

Splicing of the two film strips used in the present system of 3-D projection has been previously discussed in IP, in articles by Robert A. Mitchell and others. However, since the proper splicing procedure for 3-D is so important that one improperly made splice can ruin a whole show, it is a good idea to review the procedure although a large proportion of projectionists have already handled 3-D prints and are familiar with it.

There really is only one important point in addition to standard procedure that must be remembered in connection with splicing 3-D prints, but in the rush that occurs when the cumbersome two-projector system is used in the theatre, and when prints are checked in undermanned exchanges, it is often forgotten.

When a splice is made in a 3-D print, it is necessary to pick out two identical footage numbers (both of the paired prints are identically marked every foot along the edge of the entire print) and check the two prints to determine whether any frames are missing from the broken print.

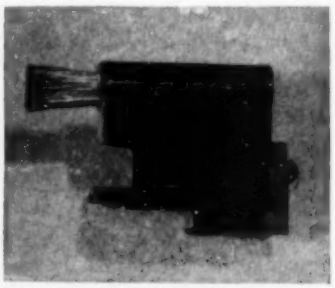
A broken print must be repaired by adding black frame-line leader to replace missing frames. For example, if four frames of a print are destroyed, six frames of black leader would be inserted if two more frames are destroyed in making the splice. After the black leader has been added, check this print with its companion print. If there are an identical number of frames between the footage numbers on both prints at the point where the splice occurs, that particular splice cannot throw the pro-

Having reviewed two splicing problems that made their appearance this year with the advent of the new processes, we can return to the fundamental procedure for making a good splice. Although greater care is needed with acetate film as was explained at the beginning of this article, and also special cement, now universally available, the procedure has changed little in recent years. For those who may wish to review their knowledge, the following instructions from the Eastman Kodak Co. will be valuable.

"Splices that are wide, stiff, buckled or out of line might cause film to jump the sprockets so that torn perforations or breaks result. Perforations in the vicinity of a splice of this kind are always strained or broken. Buckled or bumpy splices result from excessive scraping, which weakens the base, and too liberal application of cement."

Too Much Cement

When too much cement is used in a splice, it will distort or buckle the splice area after it has dried and will also squeeze out under pressure in the jaws of the splicer and attack the base on either side of the splice. However, the projectionist must take care on the other hand that the applicator he uses is capable of carrying sufficient cement to cover the splice area in one stroke.



Above unit includes both scraper and fine wire brush which is especially recommended for treating splice area when the Neumade CinemaScope splicer is used. It is also valuable for removing the magnetic tracks without danger of damage to the sprocket holes.

Eastman Kodak strongly advises that the splicer be kept scrupulously clean. Pressure springs should be kept free of hardened cement and scrapings. The springs should also be checked to make certain that they are in position to insure contact across the full length and width of the splice. It was also noted that scraping blades are often kept in serv-

(Continued on page 41)

ANOTHER PRACTICAL ANSWER... *from* RCA

NEW BEAM POWER

pours more light on any screen...

NOW, HERE'S THE EXTRA LIGHT POWER the new motion pictures call for . . . the new RCA Wide-Arc Lamp System.

This is the lamp that brings 3-D and large-screen presentations to life—pours light on the screen where even your present high-amperage lamps fail to measure up.

RCA's new Wide-Arc Lamp System features a revolutionary "Hi-Efficiency" design . . . For rapid dissipation of excess heat . . . For extra protection to the lamp's high speed reflector . . . And for the prevention of film damage . . . The result—More light per ampere, than any other projection lamp ever before offered!

New Operating Economy. The carbon burning rate is low—Operating costs are kept to a minimum.

New Automatic Water Circulator. Keeps operating temperatures down. Starts automatically for extra protection.

New High Speed Positive Carbon Rotation. 15 complete revolutions per minute—Provides maximum arc stability. Carbon rotating chain drive, requiring no lubrication, eliminates troublesome gearing.

New Large High Speed Reflector. Co-ordinates closely with modern high speed projection lamps—better light distribution than ever before.

New "Instant-Acting" Ventilating Assembly. Large screened vents in lamp house base suck in cool air which instantly forces heat, carbon dust and ash out through a downward extending tube—keeps reflector cool and free of carbon dust for maximum efficiency.

Equally Efficient with Standard and new Hitex Carbon. Superior screen illumination with either standard high-intensity carbons or the new Hitex carbons.

It's RCA's answer to today's big light problems. Demonstrations on screens up to 70 feet wide prove it's everything you could ask for in big light power. For more light in drive-ins, for more light in 3-D and large-screen presentations, pour it on with the new RCA Wide-Arc Lamp System.

CHECK with your RCA Dealer for information on the Wide-Arc Lamp.

THEATRE EQUIPMENT

RADIO CORPORATION of AMERICA

ENGINEERING PRODUCTS DEPARTMENT, CAMDEN, N.J.

In Canada: RCA VICTOR Company Limited, Montreal.

★ ★ ★

Greetings for Christmas

and Best Wishes for

Prosperity and Security for 1954

from

CHICAGO LOCAL UNION NO. 110

I. A. T. S. E. & M. P. M. O.

EUGENE J. ATKINSON

Business Representative

★ ★ ★

Two Views On CinemaScope

Exhibitors groups see expensive equipment forcing small theatres to close unless aspect ratio is cut and one track sound restored — Service companies and manufacturers claim the exact opposite

ON THIS PAGE are presented two opposing views on the effect of CinemaScope and stereosound on the nation's small theatres, always the real strength of the motion picture industry. By the end of 1954 we should know which view is correct.

1—The Theatre Owners of America, strongly backed by certain important exhibitors, even including the Skouras theatre interests, and backed also by the regional groups of Allied, holds that there will be a high theatre mortality rate during the year, with new processes accounting for the majority of casualties.

2—20th Century-Fox, backed by such service companies as Altec and by such manufacturers as Motiograph, holds that CinemaScope and stereosound offer distinct advantages to the small house, particularly in areas remote from key centers. This view is expounded in the article on this page by L. D. Netter, Jr., general sales manager of Altec Service Corporation.

Important Struggle

The outcome of the struggle now being waged between the proponents of these opposing views is of great importance to the projectionists of the United States and Canada. This writer's crystal ball has long since been cracked beyond redemption, but we may hazard a guess or two based on the history of the industry.

Slightly over a quarter of a century ago the advent of sound caused very much the same sort of commotion we are witnessing today. The same charges and counter charges were made, with 20th Century-Fox the villain of the piece then as now.

Fox was the top advocate of optical sound as against the disc, the groove and the needle. In the end everybody was happy, particularly the projectionists. Optical sound tracks eliminated the need for equipment to keep the turntable and the picture in sync.

Today, just as in 1927, Fox is pushing a sound system on one film, again eliminating the need for interlocks.

In 1927 dire predictions were made that the industry was headed for oblivion. Radio was the culprit. Today it is television.

Despite the ruckus over optical sound, and despite the challenge of radio, there are more theatres in the United States and Canada in 1953 than in 1927. In that fact this writer sees the answer. There is food for thought, too, in the financial world's attitude to the movie business. As IP goes to press movie stocks were climbing slowly from their low points for the year. Fox, and Fox alone, was but a scant half point below its top mark of 20 for the year.

According to the old saying, the proof of the pudding is in the eating. As of December 1, a survey by IP reveals, more than 4,000 orders were on hand for CinemaScope projection installations and more than 240 installations had been completed.

20th Century-Fox has completed 10 films in the medium and is set to start production on 11 others. Metro has announced eight CinemaScope films and Warner is set for 18 with Columbia toying with the idea of a feature, "The Long Grey Line." Walt Disney is hard at work on CinemaScope cartoons.

If the film outlook for 1954 isn't high, wide and handsome, it's at least wide.

SAYS AN EXHIBITOR:

"New screens, new methods of projection, and new sound are not the whole answer — they merely make the picture more attractive to the public. They may make a good picture better, but they will never make a bad picture good."

Excerpt from a talk by Walter Reade, Jr., president of TOA, at the Kansas-Missouri Theatre Assn. convention, on Dec. 2.

Small Theatres Install Stereosound

by L. D. NETTER, JR.

General Sales Manager, Altec Service Corporation

IT IS our conviction that one of the aftermaths of the November TESMA-TOA convention in Chicago will bear out the contention of the Altec Service Corporation that many of the nation's smaller theatres are now impressed with the ticket window potential of stereophonic sound.

We believe that the next few months will see the installation of many smaller and less expensive stereosound systems in hundreds of smaller capacity houses in cities and towns far removed from key centers.

This belief is not wishful thinking on the part of the Altec organization. It is based on several solid factors; the statements made to the writer by many small theatre owners who have been delaying the installation of CinemaScope and Stereosound only because of the unavailability of CinemaScope product, a situation that is now being remedied rapidly; also Altec's own record of stereophonic installations in smaller centers.

This record reveals installations, for example, in such small towns and cities as Maryville, Missouri, population 6,000; Texarkana, Texas, population 17,000, and Omar, West Virginia, population 1,800. Three other West Virginia communities might be listed, War, 1,500; Elkins, 10,000, and Marmet, 1,200.

Literally dozens of other towns could be mentioned, all the way from Ontario in Oregon to Donaldsonville and Lafayette in Louisiana.

Another important factor in our thinking is the effective and impressive results which have been achieved by stereosound in a number of small houses. It has been noted by exhibitors and engineers that the audience impact through the use of directional sound in small theatres equals the results achieved in the country's largest houses. Because of the smaller seating area the feeling of participation and intimacy is enhanced. The audience is effectively placed right in the middle of every dramatic scene.

For these reasons, Altec believes there will be a continuing demand for stereophonic installations on the part of those theatres which have been the backbone of the industry for many years.

Boxoffice TV Tested on Coast

The Telemeter boxoffice television system, which ties in with local theatres and uses a coin box attachment, launched in Palm Springs, California.

THE BOXOFFICE-IN-THE-HOME idea for selling newly released motion pictures to a Tv audience — an idea that may greatly change the film exhibition business a few years from now — is receiving a test this month in the sunny and prosperous community of Palm Springs, Calif., with Hollywood moguls in nearby Los Angeles watching closely.

The test is being conducted by the International Telemeter Corp., of Los Angeles, which is half owned by Paramount Pictures. Telemeter differs from other boxoffice Tv systems in that it is expected to tie in with local theatres if it is used commercially and the government gives its approval to boxoffice Tv.

The first picture made available to the home Tv audience in Palm Springs was Paramount's "Forever Female," a new comedy starring William Holden and Ginger Rogers. The picture opened at Earl Strebe's Plaza, a local theatre, and at the same time became available over the Telemeter setup.

Studios Interested

Within a few days after the test began, rumors circulated in both Hollywood and New York that other studios in addition to Paramount were impressed by the tests and that a move was underway for motion picture interests to acquire one of the two other boxoffice television systems, either Phonevision or Skiatron.

However, charging money for the right to view Tv in the home is not now legally possible except under special circumstances. The Federal Communications Commission is expected to hold hearings on boxoffice Tv before the end of 1954, but at the moment this form of presentation is not permissable because the air is considered "free" and no direct charge is allowed for entertainment transmitted to a home over radio waves. The Telemeter test was possible in Palm Springs because the community is not in a regular Tv reception area and programs are received over a closed circuit.

Palm Springs homes receive their Tv programs over a closed coaxial cable circuit from a community antenna at the western edge of the town where Tv signals from Los Angeles can be picked up. Telemeter taps this circuit without actually going on the air.

Coin Box Attachment

Suggestions of veteran movie men on how to strengthen the sales appeal of boxoffice television were used in developing the Telemeter system. The coin-box attachment for the Tv set makes it possible to announce and

(Continued on page 40)

★

Season's Greetings

To Our Projectionist Friends Everywhere

from

NATIONAL THEATRE SUPPLY

and

INTERNATIONAL PROJECTOR CORPORATION

★

Love's new sweet song
True love never did run smoothly—
not in the continuity. But in filming
it must . . . if new-day budgets are
to be met. That is why so much attention
is given to keying film and situation . . .
to precision processing controls; why so much
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Technical Service for Motion
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Branches at strategic centers . . .
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EXTRA *Motion Picture News* EXTRA

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FOR THE GREATLY INCREASED VOLUME OF LIGHT DEMANDED BY 3-D, CINEMASCOPE

and other wide screen processes you need

the new

NATIONAL EXCELITE "135" PROJECTION ARC LAMP

Burns 10 mm "Hitex" carbons at 135 amperes, or 11 mm regular carbons at 120 amperes. For the

FULL HOUR RUNNING PERIOD

of 5000-ft 3-d reels, the 10 mm "Hitex" can be burned at 120 amperes, or 11 mm regular carbons can be burned at 115 amperes. The color value and intensity of the light at the screen is maintained constant throughout a full trim

WITHOUT MANUAL ADJUSTMENT

by an automatic arc crater positioner. Positioned in the path of the light beam, National's new Reflect-O-Heat Unit permits a great increase in light at the screen

WITHOUT A CORRESPONDING INCREASE IN HEAT AT THE APERTURE

See National Theatre Supply about this new lamp now!

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"THERE'S A BRANCH NEAR YOU"

IN THE
SPOTLIGHT

At this year's end, the conductor of these columns extends Greetings and Best Wishes to the many friends throughout the Alliance who, by their graciousness and cooperation, have made our path during the past year so much easier.

• Our congratulations to the latest addition to the IA family — Local 850, St. John's, Newfoundland. The members of this new Local — motion picture studio production technicians — are employed by a Canadian government sponsored producer, Atlantic Films and Electronics, Ltd. This government sponsored outfit will produce documentary films.

• The Southern District Council No. 2, comprised of IATSE Locals, met on November 17 last at the Chapman Park Hotel in Los Angeles. The 60 delegates to the meeting and their wives were the guests of Los Angeles Local 150 at a banquet, which followed the close of the business sessions. Carl G. Cooper, IA 4th vice-president, and Zeal Fairbanks, IA representative, were among the top International officials present.

• Local 135, Sedalia, Mo., recently concluded negotiations with the Uptown Theatre in Sedalia calling for a 10% wage increase, two weeks vacation with pay, and time and one-half pay after 35 hours.

• Harry E. Storin, member of New York Local 306, was elected 1st deputy president of the Associated Masonic Clubs of the State of New York.

• The 25-30 Club will hold its annual installation, dinner and dance on Thursday evening, January 14, next, at Zimmerman's Hungarian Restaurant in New York. A highlight of the evening will be the presentation of beautifully inscribed retirement cards to all members of the Club who have either retired from the craft or are on pension. A most enjoyable and memorable evening, full of surprises, is in store for the members and their guests, according to a Club announcement.

• Al Kaye, member of Local 334, Hudson County, N. J., rounded out 30 years service with Warner Bros. by switching to Loew's Jersey City.

• Michael J. Nugent, recording and corresponding secretary of Local 650, Westchester County, N. Y., was re-elected for the third term as councilman for the city of Yonkers. He was nominated by the Democratic party, endorsed by the Liberal Party, Westchester Federation of Labor, and the CIO of Westchester County. With such backing his re-election was a foregone conclusion.

Nugent's civic interests take in such activities as the National Advisory Committee of the Labor Participation

Michael J. Nugent, secretary, Local 650 Westchester Co., N. Y.

Department of the Community Chests and Councils of America, on which he serves as AF of L representative; he is 1st vice-president of the Yonkers Community Chest; trustee of the Westchester Federation of Labor; member of the LaRabida Council, Knights of Columbus, and of the Lions Club. In addition to all this he is employed as projectionist at the RKO Proctor's Theatre in Yonkers. A pretty busy schedule for any one man, we say.

• Daniel V. Flask succeeded Paul Mach as president of Local 171, Pittsburgh, Penna.

• The yearly financial statement sent to all members of Chicago Local 110 is a most interesting document in that it reports to each individual member the disposition of all monies received and disbursed by the Local. This report, drawn up by an independent firm of auditors, reveals, among other things, that as of August 31, 1953, Local 110 had on hand

Holiday Greetings and Best Wishes

25 I E A S N.Y.C. T 30

To Our Many Friends Everywhere

United States Savings Bonds with a maturity value of $520,000 (original cost is $389,015.00). It also lists the total income from the various welfare funds and gives an itemized account of the many benefit disbursements made during the year — such as sick, vacation, old age retirement and death benefits. The grand total of cash and securities on hand as of August 31, 1953 is shown to be $708,640.50 — which is not hay in any man's country.

Under the guidance of its business representative, Eugene Atkinson, and its secretary, Clarence Jalas, Chicago Local 110 has for a number of years enjoyed the reputation of being one of the best administered Locals in the Alliance. The report outlined above confirms it.

• The untimely death last month of Charles Kellner, chief projectionist at RCA's Johnny Victor Theatre in New York, was a shock to his many friends in the industry. He was ill but a short time and it was generally believed that he was well on the road to recovery. Early this year Kellner completed 25 years service with RCA and was scheduled to attend the dinner given by the company to all employees with the organization for 25 years, but illness prevented his attendance.

Kellner was well-known in projection circles throughout the country and the Johnny Victor Theatre was a "must" with many out-of-town IA men, along with the Music Hall and the ace Broadway motion picture houses. His unfailing courtesy and friendliness to these visitors won him their respect and admiration.

• One of our subscribers, Harry Hollander, has informed us that he has available back issues of IP beginning with January 1944. Those interested in obtaining back numbers may contact Hollander at 21-36 Seventy-seventh St., Jackson Heights, L. I., N. Y.

• IP's "Monthly Chat" for October, in which we commented on the remarks made by a service company official who blasted the so-called inefficiency of projectionists in showing 3-D pictures, seems to have stirred up quite a bit of feeling in projectionist circles, judging from the many letters we have received. Typical is the following letter from a supervisor of projection for a Mid-West chain of theatres whose identity, for obvious reasons, cannot be revealed:

"The October editorial in IP anent an unnamed representative for a service company who stated in an address at a convention of exhibitors in Boston several months ago that projectionists were to blame for customer deficits at the box-office because they are not super-wizards, was a pretty good spit ball. Did he praise Hollywood for its perfect (?) product that was being so messed up? I mean the Hollywood that informed us that each and every foot of 3-D film would be edgemarked.

"I should like to relate here a true incident where projectionists were put on the spot, so to speak — received no immediate help — and in spite of unforeseen complications, kept the show going. And for which they received no plaudits from the industry.

"The management of a certain motion picture theatre in my territory decided that it was not necessary to screen any of the new 3-D prints, accepting Hollywood's word that all new prints were in perfect sync. This theatre had already successfully shown a number of 3-D features and anticipated no trouble with the new ones.

"Before leaving the theatre one night after running a 2-D picture, the projectionists ran the test loops, checked the alignment and left everything in readiness for the next day's show — a 3-D film. The print arrived the next morning, as per schedule, but with the *censor strip on the beginning of one reel and no added footage on the other.* This, however, was caught on the rewind and before the showing.

"The picture was flashed on the screen and the main title went through with a

★

Compliments of the Season

LOS ANGELES LOCAL NO. 150
I. A. T. S. E.

VETERAN MEMBERS OBSERVE 50TH ANNIVERSARY OF L. 105, LONDON, ONT., CANADA

Shown above is a group of old-time members of Local 105 present at the Local's recent 50th anniversary celebration. Seated, left to right: Joseph Maoriani, charter member holding a life membership card; Bill Newman, who joined the Local one month after it was formed in 1903 and who was presented with a life membership card at the banquet; H. McLean, member since 1917, and Fred Hewitt, who joined the Local in 1920. Standing, left to right: H. McAllaster, member since 1917; J. Saunders, Sr., who joined the Local in 1913; Alex McLeish, member since 1917 and present secretary-treasurer of the Local, and S. Bradford, member since 1919.

strange depth perception. Then the fun began — the figures on the screen were about a foot apart all the time, sometimes in sync, and at other times ghostly. (Incidentally, this show was caught by the film critics of the local newspapers!) No, there were not 2 left or 2 right prints. The alignment was checked and found okay. Laying one film over the other showed a *large* displacement of images. The trick was to find a remedy for the trouble. Meanwhile there was nothing else to do but to run just one print as a 2-D presentation in order to keep the show going.

"A call was made to the local film exchange for a solution to this 3-D fiasco. The exchange manager expressed surprise because it was a NEW print — a PREVIEW release — a FIRST-RUN, *etc.* It MUST be the fault of the equipment, stated the exchange manager. Are you in sync, he questioned. Have you checked the edge numbers? Finally, the exchange agreed to ship a new print to the theatre.

The next morning the new print arrived and the previous day's experiences with the first print were repeated. Again the film had to be shown in 2-D. The following day the theatre received a frantic phone call from the exchange asking the manager to look on the LAST page of a recently released press book (54 pages) on which he would find a note directed to projectionists. This note instructed projectionists *not to use loops, but to screen the picture and after the main title goes through, to wait until a scene comes on and then swing the projectors until you get 3-D, then, without glasses, keep them in frame.* Of course, it would have been much too simple to place these instructions inside the film can where the projectionist could see it when he removed the print.

Men Overburdened

"Now this theatre also runs a 2-D feature on the same bill with 3-D. Imagine the 2-D changeovers following this 3-D piperoo after such a projector alignment!!! The projectionists did the best they could in following the belated instructions but under the circumstances it was hardly what you would call a perfect 3-D presentation. But wait — on the last day a preview was added to the regular show. This was a 3-D preview and was produced by a company whose products rely upon perfect loop alignment. Imagine, if you can, all this in one evening — 2-D, 3-D piperoo, 2-D, 3-D preview, and a 3-D piperoo. Perhaps this is the show that the Boston orator saw.

"I have often wondered what would happen to these critics if they had to walk in cold on a 2-man de luxe job with stereo sound, 2-D, 3-D, CinemaScope, *etc.*, and hold up their end under present conditions. I would suggest that the unnamed orator with the high IQ step down from his throne and once again become one of the cheerful service men — the guy with the black bag and the long stride who, according to the folder, saves the 8 o'clock show on Saturday night with his meters. He might get a different slant on projection efficiency — or wouldn't that be good business?"

Holiday Greetings

from

LOCAL NO. 181
I. A. T. S. E.

Baltimore Maryland

★ ★ ★

Holiday Greetings

and

Best Wishes for 1954 to All Our Friends

★ ★ ★

THE BODDE SCREEN COMPANY

8829 VENICE BOULEVARD LOS ANGELES 34, CALIF.

RCA's "Magnetic Movies" Portend New Indu

Paper-thin half-inch magnetic tape carries sound and pictures in "electronic photography" process designed for television. Wide range of uses includes projection of motion pictures.

A NEW REVOLUTION in the motion picture industry, not next year nor the next but possibly within the next five years, was foreshadowed in Princeton, N. J., this month when the Radio Corporation of America unveiled "electronic photography."

The new system is simply the recording of sound and picture, the latter in either black-and-white or full color, on plastic tape coated with iron oxide. Its cost, exclusive of production, and labor, is a fraction of the cost of film. Theatre equipment is expensive.

The development is part of the $40,000,000 RCA research project from which has come the compatible color television system now awaiting official sanction in Washington. Some $25,000,000 has been expended to date, with another $15,000,000 available.

Essentially the system utilizes the electronic principles of the familiar tape sound recording. Picture recording is made possible by ultra high frequencies, video signals ranging up to 4,000,000 cycles per second as against the 20 to 20,000 cycles range for audio.

For theatre use, either theatre television or motion picture projection, equipment employed would be the same, with some modifications, as is now used for theatre Tv showings.

"Electronic photography," RCA engineers stressed, is still in the developmental stage and much research work remains to be done before the system is brought to perfection. Gen. David Sarnoff, chairman of the board of RCA, estimated the time needed at between one and two years before the system is ready for commercial television broadcast, approximately a year of this for "economic adjustment."

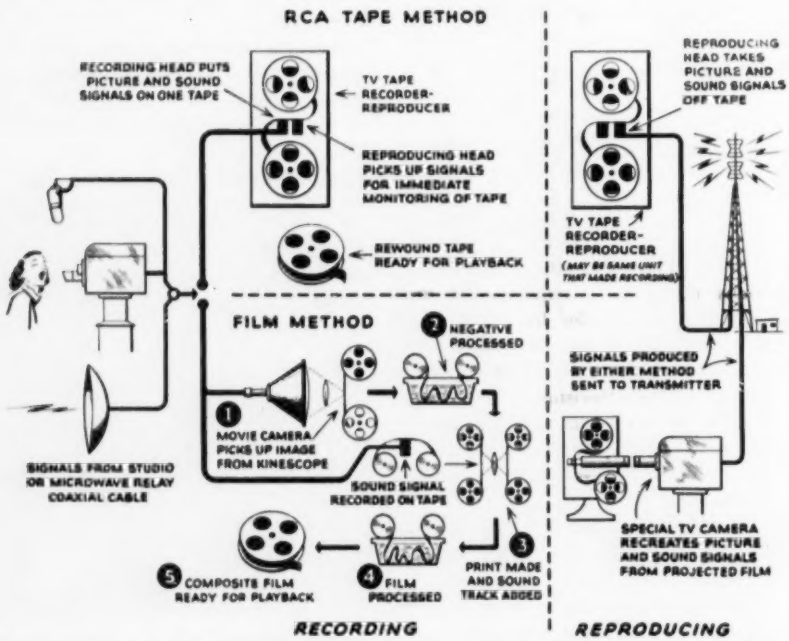
The compact equipment used in the Princeton demonstration was developed by a seven-man research team headed by Dr. Harry F. Olson and William D. Houghton. Others on the team are Maurice Artzt, J. T. Fischer, A. R. Morgan, J. G. Woodward and Joseph Zenel.

Five Years Away

RCA engineers declined to make any estimate of time before the system is ready for the theatres of the nation. However, engineers in the motion picture field were, for once, less conservative than were the industry's business leaders who saw RCA's dramatic demonstration in Princeton. The film engineers figured the time as five years, with ten years as the outside limit.

The demonstration was held at RCA's David Sarnoff Research Center at Princeton on Tuesday, December 1, with several hundred representatives of the press, including the country's top science writers, present. A second demonstration for motion picture executives and engineers was held in the afternoon. Evidence of the importance of the event is the attendance of a large contingent from Hollywood, including David O. Selznick, Nicholas M. Schenck, president of Loew's, Loren L. Ryder, Paramount's technical chief; W. F. Kelley, of the Motion Picture Research Council, and a dozen others. Ben Goetz, of Metro's staff in Britain, flew in for the show. Gen. E. P. (Ted) Curtis, Eastman Kodak, was in from Rochester. Others seeing the demonstration included Herbert Barnett, president of the SMPTE, Henry Kogel, SMPTE staff engineer, and Frank Cahill, of Warners.

While RCA's picture-on-magnetic tape system is the first to have practical proportions as demonstrated, at least two other companies are working on the same thing. Bing Crosby's


RCA TAPE METHOD
RECORDING HEAD PUTS PICTURE AND SOUND SIGNALS ON ONE TAPE
TV TAPE RECORDER-REPRODUCER
REPRODUCING HEAD PICKS UP SIGNALS FOR IMMEDIATE MONITORING OF TAPE
REWOUND TAPE READY FOR PLAYBACK
FILM METHOD
2 NEGATIVE PROCESSED
1 MOVIE CAMERA PICKS UP IMAGE FROM KINESCOPE
SIGNALS FROM STUDIO OR MICROWAVE RELAY COAXIAL CABLE
SOUND SIGNAL RECORDED ON TAPE
5 COMPOSITE FILM READY FOR PLAYBACK
4 FILM PROCESSED
3 PRINT MADE AND SOUND TRACK ADDED
RECORDING
REPRODUCING HEAD TAKES PICTURE AND SOUND SIGNALS OFF TAPE
TV TAPE RECORDER-REPRODUCER (MAY BE SAME UNIT THAT MADE RECORDING)
SIGNALS PRODUCED BY EITHER METHOD SENT TO TRANSMITTER
SPECIAL TV CAMERA RECREATES PICTURE AND SOUND SIGNALS FROM PROJECTED FILM
REPRODUCING

The diagram above shows steps in recording and reproducing a television program by the video tape method as contrasted to the typical film method used in today's telecasting. In theatre Tv, or in the projection of motion pictures from magnetic tape, additional steps would be required, including the inevitable rewind. Theatre equipment would be very much the same as is now used for theatre Tv.

try Revolution

by FREDERICK HODGSON

Research Engineer Joseph Zenel is shown holding a multiple-recording head, heart of the picture-on-tape system. The rack at the picture's left carries the magazines, head assembly (arrow) and pull-down mechanism. The rack immediately behind Mr. Zenel contains the recording amplifiers. The mulitple recording head, RCA's jealously guarded secret, is designed to respond to the ultra-high frequencies, up to 4,000,000 cycles per second, needed for pictures. Magnetic soundheads used in motion pictures, including CinemaScope, are not required to respond beyond 20,000 cycles per sec.

research group demonstrated a black-and-white version in Los Angeles last year. Eastman Kodak is also involved in the magnetic tape field. The tape used in the Princeton demonstrations was made by Minnesota Mining.

Small Screen Size

The demonstration opened with the showing of a black-and-white picture on two television receiving sets. This previously recorded broadcast originated in New York and was picked up in Princeton. Picture size in the demonstration room was 14 inches. Dr. E. W. Engstrom, RCA vice-president in charge of the laboratories division, said the size could be expanded easily to the 21-inch, or larger, of the living-room Tv set or to the full size of a theatre screen by means of theatre Tv equipment.

This writer watched the demonstration variously from a half dozen points in the room. Picture definition was very sharp. There was a slight reddish glow at the top of the picture. This was evident on both receivers.

Following the black-and-white showing there was a playback of a previously recorded color picture. The latter was not as satisfactory as the black-and-white, the general effect being somewhat similar in color quality to the viewing of an old-time anaglyph 3-D picture. Color values were definitely bad, a fact fully realized by RCA. In commenting, Gen. Sarnoff again stressed the fact that the system was still being developed but that the basic problems had been licked. It remains now, he said, to bring it to perfection.

The third item was a playback of a black-and-white magnetic recording of a scene made in New York, carried to Princeton by microwave, picked up by an antennae on the roof of the laboratory and recorded. Fourth was a live color television program, also via microwave from New York 45 miles away. This was first shown live, then immediately played back with an absolutely imperceptible time lag, 1/30th of a second.

Featured in all showings was Margaret Hayes, motion picture and television actress. The production was under the direction of Herbert Swope, Jr., of NBC.

Projectionists Are Needed

In watching the demonstration, *International Projectionist* was concerned with two major considerations, the economic and the technical. What would the system mean to the projectionist in the theatre? At this writing it appears that at least as many men will be required for projection as are needed for motion picture film. More may be needed, particularly if the system means a greater use of theatre television. In addition to putting the picture on the screen theatre Tv requires split second timing with one man devoting his attention to cues.

As stated earlier in this report, RCA's method of video recording is similar, in basic respects, to the techniques used to record speech and music with present day magnetic tape sound equipment. Electrical signals are impressed through a recording head, a small horseshoe electro-magnet, onto the magnetically treated surface of the plastic tape. As the tape is drawn over the recording head, the head continuously changes the magnetic polarity of the magnetic oxide particles on the tape so that they become a compact code of the original signal.

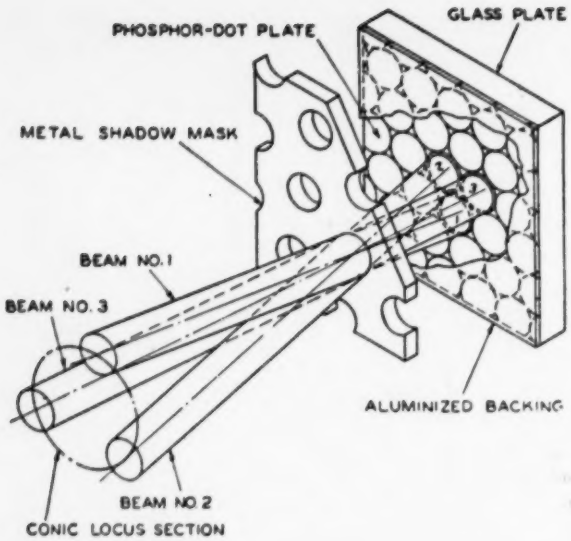
For playback, the tape is drawn across the same, or a similar head. The magnetic "shorthand" on the tape causes an alternating current to flow in the windings around the reproducing head. The reproduced current closely duplicates the original signal.

Audio Is Simpler

Although the principles are similar, the engineering problems are not; audio recording being a simple task in contrast to video recording. The reason, as stated earlier, is that audio signals are in the 20 to 20,000 cycles range, while video signals range up to 4,000,000 cycles per second. Color television signals, as now formulated, must carry at least twice as much picture information as black-and-white.

Among the technical video tape problems either already licked by RCA engineers, or approaching solution, are:

1—HIGH-FREQUENCY RECORDING HEADS. Research has resulted in specially developed recording and reproducing heads which respond to fre-



This diagram illustrates the principle of color television in the RCA system. Electron beams representing the three primary colors — red, blue, and green — are directed to particular phosphor dots each of which reproduces a separate color. The beams converge and pass through small holes in a metal shadow mask, and then diverge again for a short distance until reaching the proper phosphor dot. The portion of the tube represented is a small section of the shadow mask and the face of the tube.

quencies many times above the cut-off point for the recording heads now used in sound recording on magnetic tape. This means that the speed of the tape across the head has been brought to within manageable limits. The equipment used in the demonstration has a tape speed of 30 feet per second, or just above 20 miles an hour.

Reducing this to motion picture terms, the tape moves at 1,800 feet per minute, twenty times as fast as the 90-feet-per-minute of film. Film moves through the projector at a speed of 5.460 feet per hour, or slightly faster than one mile per hour. Tape moves at 108.000 feet per hour.

Advanced equipment, Dr. Engstrom said, is now under construction and this will move the tape at a much slower rate.

17-Inch Reels

2—Size of magnetic tape reels. The magnetic tape reels of the laboratory equipment demonstrated in Princeton are 17-inches in diameter and record just four minutes of a television program. RCA engineers are working on a reel 19 inches in diameter designed to carry 15 minutes of program. Using a change-over system similar to that used for film in theatres, it will be possible, Dr. Engstrom said, to give a show of indefinite length.

3—Electronic amplifying and equalizing circuits. Recording and reproducing amplifiers have been designed to handle the signal inputs and the signal outputs. These take into account and compensate for the characteristics of the heads and the magnetic tape materials when recording the very wide bands of frequencies used in television. Research is now going forward to obtain better response characteristics than at present.

4—Constant speed tape transport mechanism. Since even small variations in the speed of the tape and in the pressure at which it bears on the head can create noticeable effects on the picture, it was necessary to devise precision apparatus to accurately control the speed of the tape at the recording and reproducing points. The laboratory video tape equipment controls these many times more accurately than is necessary in magnetic tape recorders for sound alone. Even greater precision in regulating speed and pressure appears possible through research now under way.

The equipment, examined by *International Projectionist*, uses a flywheel to maintain constant and even speed.

Five Channels Used

5—Assignment of tape channels. For video tape recording of color television with the RCA system, five parallel channels are recorded on the single magnetic tape one half inch in width and tissue paper-thin. There is one recorded channel for each of the primary color signals, red, green and blue; for the synchronizing signal and for the sound signal. For black-and-white recording a one-quarter inch tape would suffice.

In the demonstration seen by IP of color television recording on magnetic tape, the five recorded channels were obtained from the output of a single color Tv receiver. In reproducing from the recordings, the tape supplied the three primary color signals direct to the three electron guns of the RCA tri-color kinescope, the signals needed to synchronize the scanning, and the signal which carried the sound.

To rebroadcast a color television program it is necessary to combine the three primary color signals with the synchronizing signal to form a composite signal to send to the transmitter. While this operation is not yet ready for demonstration, Dr. Engstrom said that it is the subject of current development and that apparatus to produce this result is now being designed.

"While some technical problems still must be surmounted before video tape equipment can be made available commercially," Dr. Engstrom said, "RCA considers that the toughest of them have been conquered and that further development is certain to solve the remainder."

No Film Processing

Gen. Sarnoff described the achievement of the RCA engineers as "the first major step into an era of electronic photography in which motion pictures in color and black-and-white will be produced quickly and economically, without any photographic development or processing.

"Magnetic tape recording of television programs as shown today," Sarnoff said, "has great possibilities first for television broadcasting and, later, for national defense, for the motion picture and theatre industry, for industry in general, for education, and for home entertainment.

"While this electronic video tape equipment is still in the developmental stage, the basic principles and principal elements of our system have been tested and confirmed. We are confident that it is only a matter of time, perhaps two years, before the finishing touches will bring the system to commercial reality.

"It is essential for the future of the television art that video tape recording be introduced to give the television industry a practical, low-cost solution to program recording, immediate playback, and rapid distribution. Video tape will be important for black-and-

white broadcasting; it will be essential in the creation of a full color television service.

"According to our present estimates, the cost of recording a color television program on magnetic tape would be only five percent of what it would cost to put it on color film, since the tape can be reused."

Advantages Over Film

Gen. Sarnoff, declaring the development had far wider horizons than its immediate purpose in TV broadcasting, claimed advantages of magnetic tape over ordinary film.

"Magnetic tape requires no chemical processing," he said. "The pictures can be viewed the instant they are taken, which adds new flexibility in making motion pictures. An unlimited number of copies of magnetic tape recordings can be made quickly. Recorded tapes can be preserved indefinitely for historic reference, or, if desired, can be electronically 'wiped off' and reused again and again.

"With further development of video tape techniques, numerous possibilities will open up. Small portable television cameras are already in wide use in industry, in stores, in banks, in schools and colleges. Low-cost television cameras that work like satellites off home television receivers are ultimately possible. Eventually, low-cost video tape equipment of simpler and more compact design than the studio-type equipment shown today can be made available as attachments for these cameras.

"The all-electronic chain of portable television camera, video tape recorder and standard television receiver, would make a convenient and versatile system for making amateur as well as professional motion pictures. It will speed the preparation of newsreels and will be a useful tool for news reporters. The tape would not have to be sent away for processing with its attendant delays and extra costs. In the home, the tape equipment could be used for home movies or connected to the television set to make a personal recording of a favorite television program."

Much Time Saved

Outlining the need for tape recording techniques, Dr. Engstrom, explained the complications involved in conventional kinescope recording of television pictures.

"When a television program is recorded by kinescope recording methods," he said, "the pictures pass from the television camera through most of the television system to be reproduced on a small kinescope, or picture tube. A special motion picture camera then photographs the program on motion picture film. The film must be chemically processed and, usually, a print made before the pictures can be reproduced. The reproduction requires another installation in which a television camera tube picks up the scene from a motion picture projector for rebroadcast.

"The current kinescope recording process is a round-about and costly approach," Dr. Engstrom said. "It is time-consuming, with film processing time running to several hours in most cases. And the quality may be limited, since the pictures must encounter all the hazards, of both the television system and the photographic process.

"In going from the electrical signals of the camera to the signals for rebroadcast by a television transmitter, kinescope recording requires four separate intermediate pictures to be formed, two by television and two photographically. There is no fundamental need for these intermediate steps.

"Magnetic tape recording, in contrast, stores the electrical signals directly as they come from the television camera. No processing, electronic or photographic, is necessary before the tape is played back. A single compact piece of equipment, which handles both recording and reproduction, will do the job of two complex installations needed with photographic methods."

Savings with Tape

Comparative estimates of operating costs (which include payroll, cost of tape or film and amortization of equipment) are highly favorable to tape methods. Although magnetic tape today costs more per minute of program time than 35-mm color film, the fact that tape needs no processing before playback compensates for the expense of raw tape. Engineers pointed out that what makes the savings on tape so great is the fact that the program can be electronically "wiped off" and the tape reused; in most normal operations it would be reused many times.

Recording black-and-white programs on film is estimated to be at least five times as costly as it would be on ¼-inch magnetic tape, assuming that the tape would be reused many times. In making copies for distribution to television stations, a half-hour program could be taped for less than $15 per copy, provided the tape is reused many times. (These figures, of course, refer only to the cost of producing the recorded tape, and not to the cost of the program.)

Even greater economies are estimated for making the original tape recording of color television programs, which under normal operating circumstances could be handled for only five percent of the cost entailed in color film recording. In making copies on tape that is to be used over and over again, a tape recording of a half-hour color program would cost roughly $20.

Equipment Is Costly

Equipment for the new process includes an extremely light television camera weighing but 27 pounds and using the new Vidicon tube. This tube weighs two ounces and is but a fraction the size of the iconoscope tube, although it is said by RCA to have triple the sensitivity. For details of the RCA color Tv system see the article "Color Tv and How it Works" by James Morris starting on page 14 of the September IP.

For theatre projection of motion pictures the magnetic tape would activate an electron "gun," firing streams of electrons to a sensitized plate within the projector. The resultant picture, as in theatre Tv, is then reflected to the screen.

While the tape cost, as explained at the demonstration by Gen. Sarnoff and by Dr. Engstrom, would be slight in contrast to the cost of either black-and-white or color film, the equipment cost to theatres would be high. Guesses run as high as $15,000 per unit, based on the present cost of theatre television installations.

Season's Greetings

LOCAL NO. 488

Harrisburg Penna.

What's Your Problem?

Projectionists whose problems appear below will each receive a $3.00 check from IP. We'd like to know "what's YOUR problem?"

Q. I am using Baldor Rectolite 4-tube tungar rectifiers and I frequently have a tube refuse to deliver any current. All will be working well until I strike the arc for a new reel. Then one of the tubes will not deliver. The filament will be in perfect condition and will burn normally but nothing will come from the plate. The tube may be only a couple of weeks old. The only remedy I can find is to replace it with a new tube. Then all is well again. I have tried the faulty tubes in other sockets and even in the other rectifier, but still they refuse to work. I would like to know if there is any way of bringing these tubes back to life? J. G. Jackson, Capitol Theatre, Port Alberni, B.C., Canada.

A. When an electrical engineer familiar with Baldor equipment was consulted on this question, he was unable to give a definite answer because the description of the rectifier's behavior was not detailed enough. However, he did make a suggestion. One important step in locating the trouble would be to check the plate and filament voltage of each tube in the rectifier, also checking voltages in the other rectifier for purposes of comparison. The check should start on the day that one of these short-life tubes is installed and be continued until the tube stops functioning. If the tube with the short life is receiving an improper current load, this would show up in the check. There is no way of bringing a dead tube back to life.

The engineer also commented on an experience he had some years ago which might have some bearing on your case. He traced some rectifier trouble to a rare situation where a batch of slightly defective rectifier tubes had been received by a theatre. The fundamental design of the tube is simple, he said, but performance depends on the atmosphere in the tube as well as on the filament. If there is a slight leak, permitting oxygen to enter, this would not necessarily be immediately apparent, but close observation should show traces of a milky-white powder deposit on the inside of the glass or on the filament supporting structure of the tube.

* * *

Q. This may be a very simple question but so far I've been unable to find any satisfactory answer. While showing 3-D at a drive-in theatre here, we ran across a bad print that had several feet of black film spliced in to make up lost footage. When this reel was run a second time (on the right-hand machine) we covered left eyes but still could see very plainly the picture coming from the left machine with our right eye when the black frame leader ran through the right machine. I was under the impression that the left-eye picture cannot be seen by the right eye and vice versa. Would this situation be the fault of improper polarizing filters, either in the projection room or on the viewers? Wayne G. Smith, Local 446, Hamlet Road, Seaside, Ore.

A. Your impression is absolutely correct. In a properly projected 3-D picture, the left-eye image should be seen only with the left eye and the right-eye image only with the right. As you suggest yourself, the trouble could easily lie with the polarizing filters. They might have been damaged by heat if they were ever exposed to the full beam of the projector without shutter or film in the gate. This would be particularly true in the case of powerful drive-in lamps. Also, if your screen did not have the surface required to retain polarization, or was quickly and improperly painted, it could destroy the polarizing work of your projection filters. In addition, your filters should have been level and perpendicular to the projection beam.

There is one other possibility which hardly seems likely since you certainly would have noticed it. If your polarizing filters had been accidently switched in the projector during the rush of setting up a 3-D show so that the left was in front of the right print and vice versa, you would have seen the left eye image with your right eye. You would have noticed this, however, because such a situation creates a most uncomfortable reverse effect in the stereo picture which would be obvious to you and all others watching the screen.

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Season's Greetings

NATIONAL CARBON COMPANY

A Division of Union Carbide and Carbon Corporation

NEW YORK

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Greetings from

The New York State Association

of

Motion Picture Projectionists

"An Educational & Technical Society"

New Products for the Industry

16-MM PROJECTION TABLE. A compact and adaptable projection table for 16-mm projection is offered by the Smith System Heating Co., Minneapolis. The table, which measures 17 by 29 by 42 inches, is all-metal in construction and has 3-inch swivel castors, two of them with brakes.

PERMANENT 3-D VIEWERS. The Texas State Optical Co., a large retail chain, is marketing low-cost permanent 3-D viewers. The "glasses" are sold in two styles, regular and also clip-ons for those who already wear glasses. Prices are reported to be slightly under $2.

INVISIBLE SEAM VINYL SCREEN. A screen of vinyl plastic with "invisible" seams is offered by J. E. Robin, Inc., East Orange, N. J. A plastic welding process, developed by Max Schumann, German screen specialist, is said to make seams invisible even under bright light. Another feature claimed is a "no-sag" suspension system which is said to eliminate buckling and sagging.

FIBERGLASS DRIVE-IN SCREEN. An "all-purpose" screen for drive-in theatres, constructed of fiberglass and said to be suitable for both 2-D and 3-D projection, is marketed by the Natco Wonder Screen Co., Dallas. Sheets of fiberglass 8 by 10 feet in size and 1/8th of an inch thick are applied to a metal frame. While fiberglass has great tensile strength, it is flexible enough to permit curving, according to the company announcement. The screen can be used for both 2-D and 3-D when coated with special paint.

3-D SCREEN FROM RCA. A seamless vinyl screen designed for 3-D and wide-screen presentations is manufactured by RCA. The screen is recommended for 2-D and wide-screen presentations in houses using Suprex or high-intensity carbon arc light sources. It is said to be fungus-proof and unaffected by moisture. RCA's present Seamless Silver screen is designed for low-intensity carbon arc lamps.

NEW LORRAINE CARBONS. Two new carbons, designed to provide more light and longer burning for use with 3-D and wide-screen processes, are marketed by Lorraine Carbons, Inc., Boonton, N. J. One is the new Orlux, 140 ampere, 10-mm special grade carbon and the 11-mm 20-inch, 120 ampere type. Also available from Lorraine are 13.6-mm high-intensity carbons for condenser-type lamps, as well as a full line of smaller carbons which are claimed to be capable of burning for the full running time of a 5000-foot reel.

Best Wishes

PROJECTIONIST

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Hartford **Connecticut**

Greetings and Best Wishes

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Season's Greetings

from the

OFFICERS and MEMBERS

of

LOCAL NO. 257

Ottawa, Ont., Canada

☆

Season's Greetings

CLAYTON PRODUCTS CO.

☆

Single Strip 3-D To Get Circuit Tests

THREE major circuits have signed to give the Moropticon single film 3-D system a whirl. This is announced by Matthew Fox, chairman of the Pola-Lite company, who adds that plenty of picture product will be available.

The trio of exhibitor groups is headed by 50 theatres of the Stanley-Warner chain. Bob O'Donnell's Interstate Circuit in Texas and the Malco Theatres in Tennessee are the others. First film for release will be Universal-International's color picture "Taza, Son of Cochise," due in early February.

IP attended the November 20 Moropticon demonstration in New York's big Capitol Theatre and checked the projection room both before and after the show. We were impressed by the possibilities but not by the demonstration. With Richard Morros and Herbert Strasser in charge, other demonstrations for exhibitors and the press are being held throughout the country.

Moropticon is a "beam splitter" system (described in detail by Robert Mitchell in the October issue of IP) using prisms and mirrors to carry the two images from the single film strip to the screen. To compensate for the inevitable loss of light in the Moropticon optics extremely light density prints are used. The system, of course, requires polarized filters and viewers.

In the demonstration seen by IP the print density had been cut to the point where the film was almost transparent. The resultant loss in picture quality followed naturally. The color was washed out very thoroughly. Amperage was 170 at the arc, both for the single strip demonstration and for the immediately previous "control" showing of the same scenes in conventional 3-D using two projectors. Scenes were from "Taza, Son of Cochise."

In saying that we were "impressed by the possibilities but not by the demonstration," IP is deliberately making allowances for the fact that print density was far too light. By the time Moropticon prints reach the theatres this difficulty should have been corrected.

The Moropticon unit is extremely compact, the complete equipment being easily packed in a small carrying case. Assembly, in front of the projection lens, takes less than 30 minutes.

Richard Morros (right), who is in charge of Moropticon demonstrations, shows Frederick Hodgson, editor of IP, just how compact is the prism system used in this 3-D process.

★

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Season's Greetings

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Washington D.C.

Holiday Greetings

LOCAL NO. 376
I. A. T. S. E.
Syracuse, N. Y.

An Improved Carbon Lamp For 3-D and Wide Screen†

by DR. EDGAR GRETENER

Three dimensional and wide-screen projection require substantially more than the conventional amount of screen light. The Super Vent-arc has been designed to meet these requirements.

RECOMMENDED operation time for 3-D projection is 60 minutes continuous burning of the arc. Mirror arcs of normal design can take positive carbons up to only 20 inches in length. The positive support or carbon-guiding mechanism requires a carbon stub of about 2 inches and so reduces the useful carbon length to 18 inches. As the consumption rate shows some variations, a safety margin of 10% should be provided. This means a further reduction of the useful carbon length to about 16 inches.

Limited by this consumption rate, the most screen lumens a present-day reflector-type arc can produce with 80% screen distribution is 20,000, with an arc current of 115 amperes and no film or shutter.

Up to the maximum limit for smooth operation, the screen light a high-intensity arc can produce increases with the increasing consumption rate of the positive carbon, since the vapors produced by the evaporation of the carbon core constitute the light source. It thus becomes necessary for maximum light that any limitation on carbon consumption rate be removed. Such limitations can be overcome by an arc which is capable of continuous burning. In order to do this it becomes necessary to attach a new carbon to the burning one as soon as the latter is consumed to a minimum length determined by the carbon support.

Carbon Joining Process

This problem of joining positives proved to be a very difficult one for a cinema arc, since no failure of the joining process can be tolerated with a continuous show. Furthermore, the quality of the joint has to be such that no flicker or color change of the projection light appears on the screen when the joint burns through the arc.

The process of joining positive carbons has been worked out by our firm in the past two years, with the kind assistance of the National Carbon Co. The results are now so satisfactory that this method is ready for practical use.

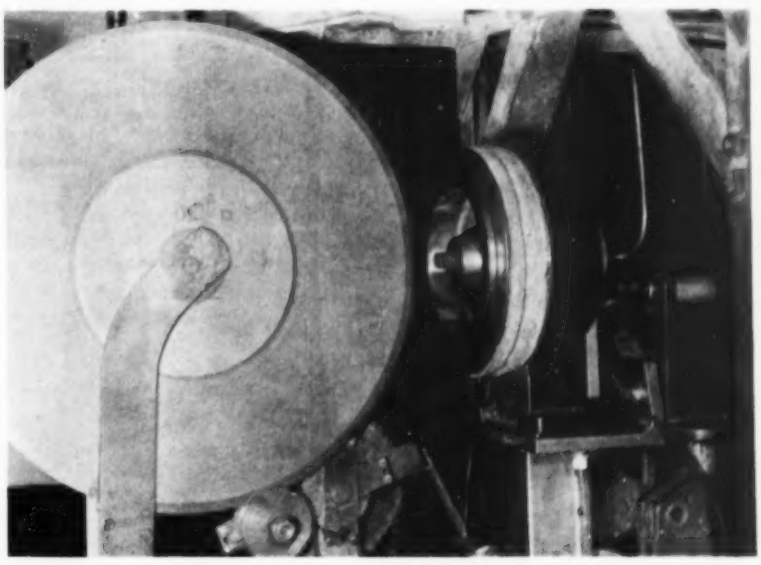
The non-rotating positive carbon of the Super Ventarc Lamp makes the joining problem much easier. From a practical point of view, the dimensional tolerances normally associated with large-scale production processes must be taken into consideration, so that a joining method requiring a very high precision of the parts to be joined would be of little practical interest. The positive carbons for continuous operation are designed as shown in Fig. 1a, so that the core protrudes at one end, with a complementary hole formed at the other.

A magazine holding positive carbons is provided in the lamphouse. As soon as the length of the burning carbon reaches a certain value, a contact is operated which causes a new carbon to leave the magazine and be joined to the burning carbon, the hollow end of the new carbon sliding over the protruding core on the cold end of the burning one (Fig. 1b). The parts to be joined are impregnated by the manufacturer with a special cement. As the joint moves toward the positive head, it is heated by a simple electrical oven, which hardens the cement. The magazine can be designed to take any quantity of positive carbons, and it can be refilled while the arc is burning.

The Disc Negative

With the continuous feed for the positive carbons, an adequate system must also be provided for the negative electrode. To obtain maximum brilliance from the arc, the current density in front of the positive crater must be increased to the maximum extent possible, thus causing a high evaporation rate of the positive carbon. With a rod negative and an arc length of reasonable value, this would give rise to "mushroom" deposits on the tip of the negative, resulting in erratic burning.

These difficulties are overcome by the use of a disc negative, mounted in a meridional plane of the illumination system. During operation of the arc, this negative disc is slowly rotated. All evaporation products con-



Above is the negative electrode assembly of the Super Ventarc. Note that the negative is a graphite disc, maintained in constant relation to the positive carbon by a separate motor. For even burning the disc is slowly rotated. The positive carbon is seen at the right, surrounded by a magnetic coil. Purpose of the latter is to "homogenize" the arc.

† Cond. from Jour. SMPTE, October, 1953. The full title of the original article is "An Improved Carbon-Arc Light Source for Three-Dimensional and Wide-Screen Projection."

densing at the edge of the disc are thus transported outside the arc stream and oxidized in the open air. The disc consumes slowly at a rate dependent upon the arc current and other factors, and has a useful life of the order of five to ten hours burning time.

The blown arc equipped with the continuous feed mechanism for the positives and combined with a suitably designed disc negative thus constitutes a source which can meet any requirement for cinema projection, within the limits imposed by the sensitivity of the film to the heat generated.

The Light Source

If the rate of evaporation of the core is high enough, the concentrated arc stream in front of the positive crater shows the same brightness as the crater itself. The absorption in the arc rises with increasing evaporation of the positive core until the crater edge is no longer visible through the arc. Under these conditions the arc stream replaces the positive crater as the light source. The brilliancy of this arc stream decreases with increasing distance from the crater.

To get a cylindrical source of constant brilliancy along its axis, an auxiliary mirror is provided near the arc, as shown in Fig. 2. This auxiliary mirror picks up the back radiation of the arc stream and forms an inverse image of the arc in itself. Seen from the direction of the main mirror the arc stream seems to operate between two positive carbons (Fig. 2).

This light cylinder produces many more lumens than the crater itself, and in addition it offers much better conditions for the illumination system. Referring to Fig. 3a, a flat source produces a very sharp peak in the center of the film aperture if the collecting angle a of the mirror is increased to 90 degrees in order to collect all the radiation of the flat source. This is due to the fact that the mirror-surface elements near the edge of the mirror see the source as a very narrow ellipse, with the small axis degenerating to zero for a 90-degree viewing angle. Because of this bad effect, the collecting angle of the mirror is normally limited to 70-75 degrees.

In contrast with this, the cylindrical light source offers its very best qualities from a viewing angle of 90 degrees to the carbon axis. This is illustrated in Fig. 3b. The illumination system of the Super Ventarc has therefore been designed to embrace the total solid angle around the source, the auxiliary mirror and the main mirror having each a collecting angle of about 90 degrees.

FIG. 1a. Positive carbons

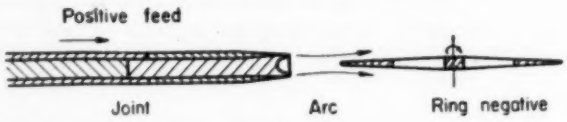


FIGURE 1b

The combination of the two mirrors not only picks up the total radiation from the cylindrical source, thus giving maximum efficiency for the illumination of the film aperture, but also prevents the lamp house from being heated by waste light from the arc.

Maximum Screen Light

The maximum possible light flux for a projection system is limited by the tolerable density of radiant energy in the film aperture.

Light losses at the heat filter can be compensated by a slight increase of the arc current, and any transmission of invisible radiation can be suppressed by additional filter layers. Consequently 50,000 lumens will be available in the future if the cutoff* at both ends of the visible spectrum can be made sharp enough and if projection-lens efficiency is 90%. This ultimate screen-lumen figure will grow proportionally if the heat tolerance of the film can be increased by forced-air cooling or the use of improved film material.

It must be pointed out that infrared transmitting mirrors are not suitable for very high-current arcs, as the support glass will be spoiled in a short time by deposits from the arc. The Super Ventarc uses a metallic mirror

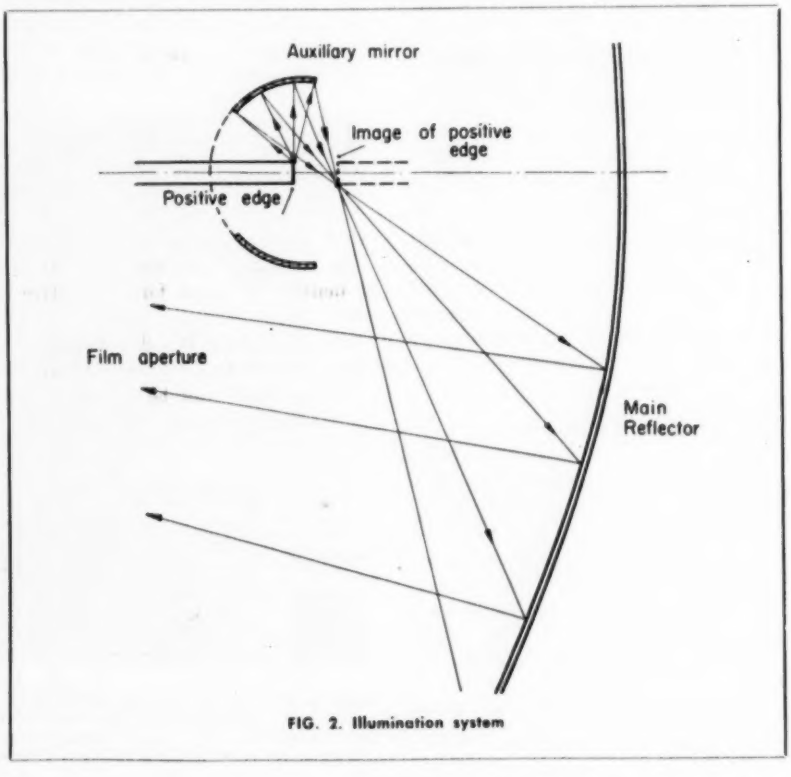


FIG. 2. Illumination system

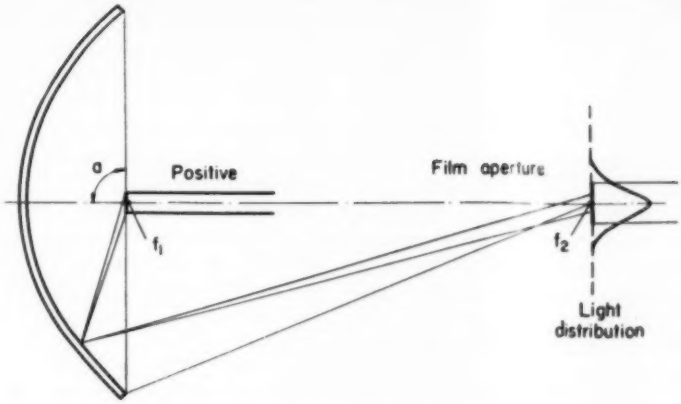


FIG. 3a. Ellipitcal reflector in focus f_1f_2 flat source.

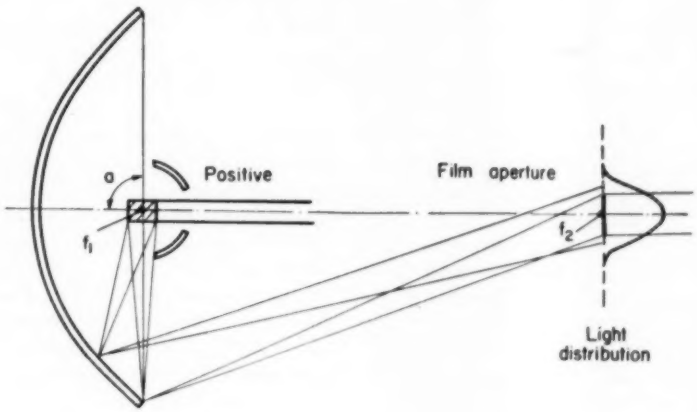


FIG. 3b. Elliptical reflector in focus f_1f_2 cylindrical source with auxiliary mirror.

evaporated with aluminum and with a protective layer of silicon monoxide. This protecting layer is so thin that its heat resistance is quite negligible. If hot particles fall on the surface of this mirror, the high heat conductivity of the metal prevents local melting, so that the particles do not fuse with the mirror surface but fall harmlessly to the bottom of the lamphouse. Comparative tests with a very heavily loaded positive crater showed the striking superiority of the metallic mirror with regard to these sputtering effects.

Color Projection

Three-dimensional and wide-screen projection must be combined with color. Since the picture is so much more realistic, the very best color has to be provided, and any color errors are much more noticeable than with a normal two-dimensional picture.

With subtractive color, the color quality is directly related to the transparency of the film, in such a way that really good color is only available with prints of high density. This is true as long as such dyestuffs as change saturation and hue with varying density are used for subtractive color.

Since color for 3-D and wide-screen projection has to be of the highest quality, it would not be practical to try to obtain more screen light for these processes by making color prints of higher transparency than that usual today for normal two-dimensional pictures.

Progress Since 1950

In an earlier article the author described a Ventarc giving a maximum output of 30,000 screen lumens with 100 amperes. The Super Ventarc presently described shows substantial progress in comparison with the technique used in 1950. The main improvements may be summarized as follows:

1. The Super Ventarc is provided with a magazine feed for the positives for continuous burning of the arc. Relatively short carbons can be used with this operation, thus giving better basic conditions for the optical illumination system. The 45-degree deflection mirror used with a vertical carbon in the earlier lamp can thus be avoided, and the positive is now arranged in the conventional horizontal position.

2. The design of the positive head has been improved by separating the carbon guide from the contact pieces, so that the centering of the positive is no longer affected by any wear of the contact pieces. These contacts are shaped as half cylinders, are directly water cooled, and each incorporates an air nozzle. Water, arc current, and compressed air are fed to the two contacts through flexible connections from a central distributor block. The carbon guide pieces are assembled with this block to form a stable unit. The contact pieces are pressed against the positive by a spring system which allows the contacts to adhere perfectly to the surface of the positive, without influencing the correct centering of the carbon (Fig. 4).

3. The big negative ring used in 1950 which surrounded the positive

(Continued on page 36)

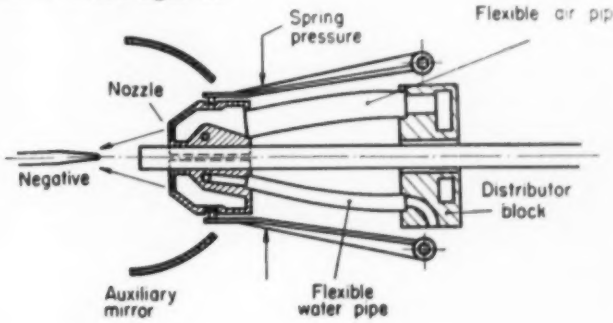


FIGURE 4. Positive head

RECENT PROJECTION ADVANCES IN EUROPE

(Continued from page 8)

them easier to operate and to keep clean.

Projectionists accustomed to open mechanisms develop a strong dislike of mechanisms "enclosed in little boxes" that hinder accessibility. This aversion is doubly intense in the case of an enclosed picture-head mounted upon an enclosed sound-head — two doors to open and close every time film is threaded into the machine! The mechanism-enclosure originated, of course, as an intended safety measure, but there is little definite evidence to support the contention that enclosed mechanisms are safer than open ones.

Mechanism Is Quiet

Those who aver that open mechanisms are noisier than enclosed ones may safely disabuse themselves of the notion. There is but little difference between the two types of mechanism on this score when the machines are in good condition, although the enclosed-type mechanism is excessively noisy when run with the door open because the enclosure greatly magnifies the noise of the rapidly fluttering loops and the clattering sound generated by the intermittent-sprocket teeth disengaging from the film perforations.

The open-type mechanism is remarkably quiet so long as the sprocket teeth are in good condition. The German projectors have gained an enviable reputation for smooth, silent operation, their extreme quietness being due to the absence of gear noises and a film path which minimizes the sound of the vibrating loops.

The unit construction of the Ernemann as a combination picture-sound machine is entirely logical. To manufacture a "silent" picture-head and mount it upon a separate sound-head seems to European projectionists a cumbersome makeshift that should have been discarded when sound-on-film became the standard medium nearly a quarter century ago.

Certain American projector manufacturers share this opinion, but feel that exhibitors prefer to buy picture and sound mechanisms separately and be able at any time to replace one or the other without having to replace both. The European exhibitor can nevertheless indulge the same whim, inasmuch as the mechanism of the Ernemann can be purchased without the sound reproducer, and the sound reproducer can be easily removed from the picture machine for replacement.

May Be Adapted

It is interesting to note that in many European machines, such as the Ernemann IX and X models there is ample provision for subsequently mounting any additional equipment which may be needed to convert the projector to handle the most modern processes. These machines will thus be able to utilize such recent developments in projection as 1-strip 3-D and wide-film panorama, as well as new sound techniques like push-pull optical tracks, magnetic tracks on the picture film or on a separate film, and all types of stereophonic sound. Adaptations to 2-strip 3-D and to Cinemascope offer no difficulties.

The driving motor of the new Ernemann models is located at the top of the projector behind the upper magazine. A heavy, vibration-free vertical shaft passes into the oiltight gear housing in which is located one of the simplest and sturdiest precision mechanisms ever devised for a motion-picture machine. The ruggedness of the gears and bearing brings to mind such top-quality American mechanisms as the Motiograph and Brenkert.

To accommodate the American 2-strip 3-D system, the shaft of the regular driving motor *(Antriebsmotor)* is extended upward, and a compact synchronizing motor *(Gleichhaltemotor)* mounted behind the upper magazine directly in line with, and above, the driving motor. No gears, chains, or sprockets are used. To be used with this setup is the "Kommando" switchbox, a neat little control cabinet which permits the machines to be operated either singly or together in synchronism at the mere flick of a switch.

Self-Lubricated

Virtually wear-proof and silent in operation, the Ernemann mechanism is automatically lubricated by a self-pumping oil-distributing system which keeps the oil free from even the smallest particles by means of a mechanical and a magnetic filter.

The back of the mechanism is covered by a smooth plate having no irregularities or protuberances to spoil the clean design of the machine or to provide lodging places for dust. There are no exposed pulleys, takeup belts, or wheels. The cover plate in the Model X contains a "Plexiglas" window at the level of the intermittent movement so that the inside of the mechanism can be inspected.

The weight of the mechanism is supported by a pedestal directly underneath, resulting in the most rigid support. This method is at variance

Season's Greetings

★

PROJECTIONISTS LOCAL NO. 173
I. A. T. S. E.

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Toronto, Ont. **Canada**

with the older practice of having the lamp directly supported by the pedestal-base. It may be observed here that German projectors are somewhat taller than the American, the height of the Ernemann X being about 6½ feet from the bottom of the pedestal to the top of the upper spoolbox, while the Euro and Bauer projectors range from 7 to nearly 8 feet high, depending on the blocking of the pedestal and the diameter of the spoolboxes. (5000- and 6000-foot reels have long been favored in northern European countries.) The projectionist's work is facilitated when the film gate and lamp are nearly on a level with the eye.

Design Is Simple

A glance at the operating side of the Ernemann (Fig. 2) reveals the extreme simplicity of the projector and the ease with which it may be threaded with film.

The feed and holdback sprockets, it will be seen, are of the 32-tooth size. There is thus less chance for the perforations of the film to get torn than when small sprockets are used. This is particularly true in the case when the larger film-reels are employed. The intermittent sprocket, however, is a 16-tooth sprocket 24 mm. (0.945 in.) in diameter, a size introduced by the Germans in the late 1920's to replace the old 23.75-mm. (0.935-inch) intermittent sprocket.

The Ernemann intermittent unit is a standard 3:1 maltese-cross movement having a somewhat larger star and cam than are found in most American projectors. Also, the pin of the cam is a roller-pin which reduces wear of the parts to the vanishing point. Like the American Brenkert, the Ernemann employs a single long bearing for the star-wheel shaft, thus making removal and replacement of the sprocket a simple operation.

Considering the inventiveness of German projector designers, we were inclined to expect the more rapid 5:1 intermittents in the post-war German models. The 5:1 intermittent permits the use of shutters having 3 cutoffs per frame (with no loss of light or sign of travel-ghost) for flickerless pictures, or the regular 2 cutoffs, with narrow shutter blades, for greatly increased light transmission.

An American manufacturer, Nicholas Power, was the first to employ a successful intermittent having a more rapid pull-down ratio than the conventional 3:1. Many projectionists still regard the Powers pin-cross intermittent as one of the best ever devised.

At the present time the maker of one of the better American projectors has plans on the drafting-board for an improved 5:1 movement which he intends to incorporate into a forthcoming mechanism — a projector that may easily render obsolete the most modern theatre machines now in use.

The aperture plates of the Ernemann Models IX and X have polished steel film runners and are readily removable for cleaning and for interchanging with the alternative plate carrying velvet-faced runners. The velvet runners are used when projecting new prints to prevent the accumulation of emulsion deposits which cause the film to "stick" and chatter, resulting in film damage and a jumpy picture on the screen.

Removing the upper base-plate detaches the shutter housing, film gate, gate door, and lens assembly as a single unit.

The gate door is built into the lens holder, the whole assembly sliding forward to allow plenty of room for threading. And as the gate of the Ernemann X opens, a "loop-former" automatically springs up into place, falling back when the gate is closed. The upper film-loop is thus ready-formed and always of the correct size. The Model IX does not have the loop-former.

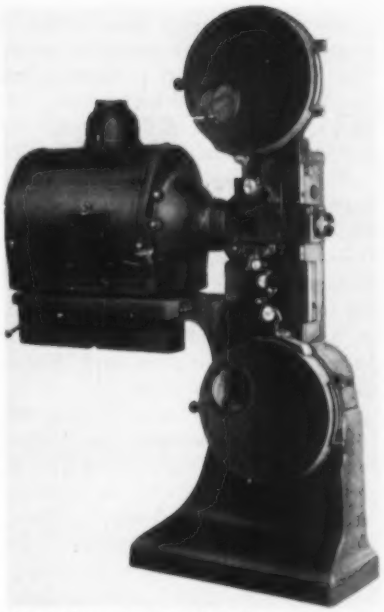
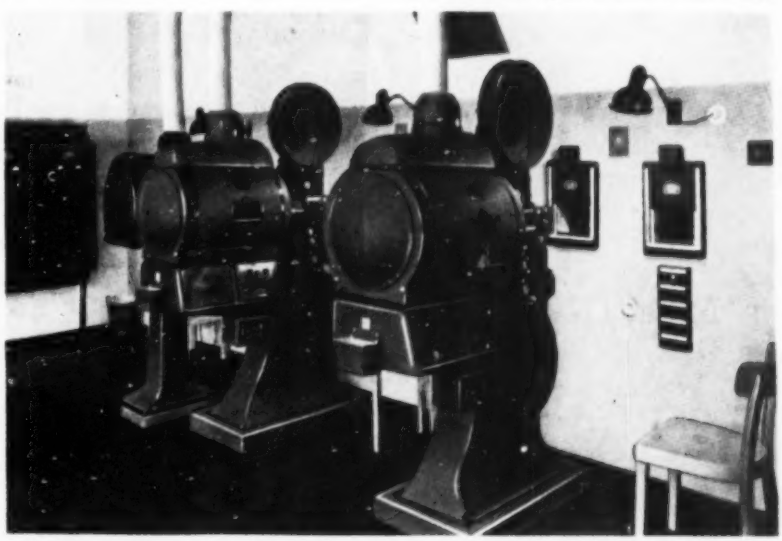


FIG. 2. Operating side of the Ernemann picture and sound mechanism. Having only three sprockets and a roomy film gate, the Ernemann can be threaded in a few seconds. The cover has been removed from the photocell preamplifier to reveal the components.

A pilot lamp in the shutter housing not only illuminates the aperture for threading, but also, in the Model X, throws an image of the frame-line upon a small circular ground-glass screen in the lens housing. Framing during projection is also extremely accurate in the Model X because the frame-line is imaged on the circular screen by the pilot lamp even while the film is running.

The lateral guide rollers are fixed



Projection room of the Metro Theatre in Kiel, Germany. The equipment includes two Ernemann X sound projectors with Magnasol IV lamps, a Zeiss Ikon Double-Dia arc projector for lantern slides, two Dominar M amplifiers, and Ikovox D speaker equipment.

to the top of the gate door instead of to the top of the aperture-plate assembly, as in American projectors, but the intermittent-sprocket shoe is carried by the bottom of the gate door in the usual manner.

The cylindrical shutter of the Ernemann functions, like the similar shutter of the Motiograph, as an extremely compact and efficient *double shutter*, cutting into the light-beam from the top and bottom simultaneously. There is, however, an interesting difference between the Ernemann and Motiograph drum-type shutters.

The Ernemann shutter contains two hinged, spring-tensioned metal "fire flaps" which open to let light through to the aperture only when the machine has nearly attained full running speed. Requiring no extra gearing in the mechanism, no centrifugal governors, friction discs, or other intricate paraphernalia to get out of order, the drum-shutter fire flaps (also used in the Bauer and Euro projectors) constitute the simplest and most positive-acting fire shutter conceivable.

Safety Devices

The fire shutter is but one of several safety devices in the Ernemann. The spoolbox film valves are arranged horizontally to prevent passage of flame to the reels. The "Protektor" upper loop-trip is connected to a separate fire drop which cuts off the light should the film break between the intermittent sprocket and the upper feed sprocket. The Simplex SP has had this device for many years, and the Simplex E-7 and X-L utilize a similar safety trip, but in the Ernemann this device also disconnects the power supply to the motor and exciting lamp.

In addition to the loop-trip, the Ernemann models also have an ignition switch at the top of the mechanism. In case of fire, this automatically stops the projector and releases the Zeiss Ikon magnetic port shutters. And a master-control safety switch is built into the lamp table. This, when pressed by the operator, disconnects the lamps and motors of both projectors simultaneously, drops all shutters, and switches on the emergency lighting.

Water-cooled Gate

The film-cooling provisions of the Ernemann not only contribute to the safety of the machine, but also improve the quality of the projection, add to the life of the film, and make operating a more pleasant occupation. Like its predecessors, the Models V and VII-B, the X is worthy of the name "cold projector."

Cold tap water is circulated continuously through the hollow gate casting, keeping the film track very cool even when the hottest arcs are used. The film is thus spared the effects of heat which in most other projectors is transferred by conduction from the heated metal parts of the gate.

The water tubes are concealed in the interior of the pedestal and mechanism. The inlet tube is connected through a valve to any pipe carrying fresh water, and the outlet tube to the drain.

Inside the mechanism case is a small separately energized blower which directs cool air, via jets, upon both sides of the film in the gate. This expedient combats heating of the film by direct irradiation, for whatever heat would otherwise be absorbed by the film is largely removed by the currents of air.

The blower operates automatically when the arc switch, located in the front of the lamp table, is turned on.

A third cooling means is provided by the cooling fan of the driving motor, which draws air up into the shutter housing where a great deal of heat is concentrated and exhausts it through the top of the mechanism. Such an expedient could have been used to advantage in an American projector, the conical-shutter housing of which traps the heat, allowing it to raise the temperature of both the mechanism and the film.

Filters Rarely Used

Heat-absorbing light filters, however, are seldom used in Europe, and are not favored generally by the manufacturers there. Of course in very large theatres and for processes, such as 3-D and various wide-screen projection systems, where high intensity carbons using high amperages are needed then filters are in the "must" category. When the amperage is over 100, and when the temperature at the aperture exceeds 1,200 degrees F., filters are required whether projection be on a European or an American machine.

With low amperages, obviously, filters are not only not needed but are a definite detriment in that they cut light, the amount depending on the type and make of filter used. There is nothing to be gained, the European manufacturers hold, in inserting filters and then raising the amperage to make up for the light loss. Practically the same results can be obtained by simply reducing the arc current. This holds true regardless of the power of the

(*Continued on page* 42)

★

Holiday Greetings

from

MOVING PICTURE MACHINE OPERATORS

LOCAL UNION NO. 233
Buffalo, N. Y.

JOHN J. WALSH
President

ALBERT F. RYDE
Business Representative

PERSONAL NOTES

ROBERT O. WHITESELL has been appointed representative of the Hertner Electric Co. in the state of Indiana and

Robert O. Whitesell, newly appointed representative for Hertner Electric Co.

the area surrounding Louisville, Ky., for the Hertner general purpose motor generator sets, variable-frequency and high-frequency motor generator sets. Mr. Whitesell is a graduate engineer. He was at one time chief engineer of the rectifier division of the P. R. Mallory Co. His headquarters are at 2208 East Washington St., Indianapolis.

PAUL CHRISTMAN, of Ansco's New York office, has been named to the sales force of the company's professional

Paul Christman, named to new sales post by Ansco.

motion picture department. In his new position, he will sell Ansco motion picture products to producers and laboratories in the theatrical, educational and industrial motion picture fields. Mr. Christman joined Ansco in Binghamton, N. Y., in 1942 in the company's precision optics department. In 1950 he was transferred from Binghamton to sales advertising in the New York branch.

F. W. HAMRE, who has held the post of technical service manager in Pittsburgh for the RCA Service Company since 1943, has been named manager of the Chicago district's technical products service division. Hamre will be succeeded in Pittsburgh by H. M. Morrow, formerly RCA field engineer in Johnstown, N. Y.

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KOLLMORGEN Optical CORPORATION

Plant: Northampton, Massachusetts

NEW YORK OFFICE: 30 CHURCH ST., NEW YORK 7, N. Y.

THE SUPER VENTARC

(Continued from page 31)

head is now replaced by a much smaller one, located entirely at the negative side of the arc, and penetrating the elliptical reflector through a suitably shaped slot. With the metallic reflector used, this proved to be possible without sacrifice of the optical precision.

Figure 5 shows the negative-electrode arrangement, in which a suction pipe picks up the hot arc gases at the inner side of the ring negative. This arrangement permits a very simple design of the negative support and its driving mechanism.

4. As the main reflector, together with the auxiliary mirror, embraces the total solid angle round the arc stream, the front part of the positive head and the main reflector are not directly accessible for inspection and cleaning. For this reason, the whole negative part of the lamp mechanism, including the main reflector, the suction pipe and the negative drive is arranged to swing out around a vertical axis, thus giving the very best accessibility to all the important parts requiring service attention. The suction pipe is designed to go through this axis of rotation, so it need not be disconnected.

5. The blower producing compressed air for the positive head and suction for the negative pipe is arranged at the top of the lamphouse. It is driven very smoothly and silently by an induction motor. The lamphouse is ventilated by an ejection system driven by the exhaust of the suction pipe. This design proved to be more effective and less costly than the ejector system used in 1950. Furthermore, it avoids the necessity of providing additional blowers outside the lamphouse.

6. The heat filter has been arranged in a slide near the dowser, so that it can easily be taken out for inspection and cleaning.

The main reflector of the Super Ventarc has been enlarged to a diameter of 24 inches. This gives the necessary space for the positive head with the auxiliary mirror, the ring negative and the magazine feed for the positives, without causing any substantial light losses due to shadow masking of the illumination beams.

The big lamphouse associated with the 24-inch mirror gives the necessary safety margin for operating the arc, even with extremely high load.

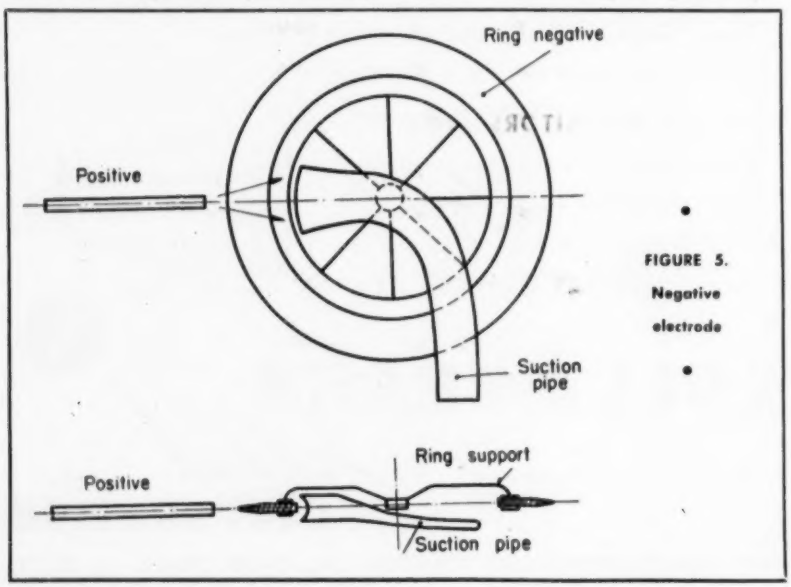


FIGURE 5. Negative electrode

Projection, Military Arcs Use Discs

THE SUPER VENTARC projection lamp described by Dr. Gretener in the accompanying article was originally adapted for use in the Eidophor theatre television system being developed for 20th Century-Fox. The principle of the graphite disc negative electrode was used during World War II in powerful searchlights by both the British and German military. Variations of such lamps are now being made for the United States forces.

Military versions of the graphite disc lamps seen by *International Projectionist* do not have the blown arc as in the Gretener lamp. Instead of the ring magnet surrounding the positive carbon, the military lamps have an electric probe to serve the same purpose of "homogenizing" the arc. The military lamps pull some 200 amps, have water-cooled jaws, magazine feeds for the positive carbons and are operated by generators mounted on trucks. Positive carbon consumption is at the rate of one every 20 minutes. Life of the negative disc electrode is about three hours.

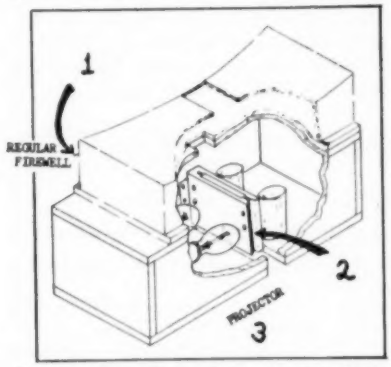
The first published reports of the Ventarc were carried by *International Projectionist* as far back as mid-1950. Three articles on the lamp were carried that year, two by Dr. Gretner, in the July and December issues. In IP for September, 1950, there appeared three short articles touching on the Ventarc mirror system in contrast with the elliptical mirror. These were written by Robert A. Mitchell, by Dr. Gretener, and by Sam Glauber, of Local 306 and a member of the Paramount projection staff in New York.

Dr. C. E. Greider, of the research laboratories of the National Carbon Co., Cleveland, Ohio, read a paper at the October, 1953, SMPTE convention in which he discussed the performance of high intensity carbons in the blown arc as in the Gretener lamp. Results of tests, Dr. Greider said, lead to the conclusion that blown arc operation permits a carbon to deliver considerably more light and to deliver the same amount of light at both a lower current and a lower rate of carbon consumption. A corollary, of course, is less heat at the aperture for a given amount of light.

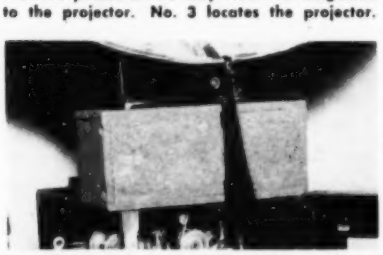
Earl Sponable, technical chief for 20th Century-Fox, said at the same SMPTE session that the super Ventarc seemed to offer the solution to the problem of supplying the huge amount of light required for CinemaScope projection on very large screens, particularly drive-ins. He added that Fox has plans for an experimental drive-in screen with a width of 135 feet.

Panaphonic System Is Shown on Coast

New demonstrations of the Panaphonic directional sound system will be held in Hollywood during December, according to Loyd Dorsett, president of Dorsett Laboratories, Norman, Oklahoma. The system, described at length in the October IP, uses darkened intersprocket spaces on the film to cue photoelectric



The line sketch above shows the Panaphonic soundhead described in the accompanying story. Barely an inch-and-a-half high, the Panaphonic optical head, which supplements the regular optical head, reacts to cue marks on the film, thus throwing sound to any speaker or set of speakers desired. In the diagram, No. 1 is the regular firewell below the top magazine, No. 2 shows the slot through which the film passes on its way from the magazine to the projector. No. 3 locates the projector.



Panaphonic unit in position with a strip of film being threaded into the slot.

cells in a special head and throw sound to any speaker or group of speakers desired.

The Panaphonic system, which the Dorsett people claim is inexpensive and fully compatible with any 2-D picture or with 3-D single strip films, was shown at the convention of the Theatre Owners of Oklahoma earlier this month in Oklahoma City. It was previously demonstrated in Hollywood under the auspices of the Motion Picture Research Council and was shown at the TESMA-TEDA-TOA convention in Chicago. Installations have been made in some 20 theatres in the Southwest.

Approve Reuse of 3-D Viewers

The Chicago Health Department has approved the Stereoptic system of cleaning 3-D viewers for reuse.

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Bell & Howell Make 'Scope Lenses

ENTRY of the Bell & Howell Company into the theatre equipment field was announced at the TESMA-TEDA-TOA* convention in Chicago, the first offering being a "new and improved" 35-mm anamorphic lens for CinemaScope projection. The announcement was made jointly by C. H. Percy, president of Bell & Howell, and by Spyros Skouras, president of Twentieth Century-Fox.

The lens, which Bell & Howell engineers claim is the "sharpest anamorphic projection lens yet produced," has six elements with the twelve glass surfaces matched to master test plates. According to company engineers who worked with Fox technicians on its development, the lens has hard magnesium fluoride coatings on all "air to glass" surfaces and is so accurately corrected that chromatic aberration is completely eliminated.

Limited quantities will be available this month, Mr. Percy said, with volume production early in 1954. The price tag is $1,900 for a set of two lenses.

The new anamorphic lens will be available in mount sizes to fit all existing projection equipment. Two types will be made, one to be used with projection lenses from 4 3/4 inches focal length with F/1.8 or F/1.9 apertures in standard 4-inch barrel mounts. The other will be used with 3-inch to 4 3/4 inch focal lengths with F/1.8 or F/1.9 apertures in standard 2.781 (2-25/32) inch barrel lengths.

While Bell & Howell is a newcomer to the theatre equipment field, the company has been a leading manufacturer of motion picture studio equipment for the past 46 years and has been active in the 16-mm and 8-mm fields

* Theatre Equipment and Supply Manufacturers Association, Theatre Equipment Dealers Association, Theatre Owners of America.

120,000 Color TV Sets

An estimate that 120,000 color television receivers would be produced in 1954 was made after a survey of Tv set sales managers attending the fall meeting of the Radio and Television Manufacturers Association this month in Chicago. Black and white production during 1954 is expected to be about 5,000,000 sets.

The first lenses designed specifically for camera use were manufactured in Paris in 1830.

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and a
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Greetings to All
LOCAL UNION NO. 253
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Fiberglas Reels May Solve Weight Problem

Support for the idea of using lightweight Fiberglas instead of steel for film containers and reels is now being heard from many sections of the motion picture industry. The idea is welcomed by projectionists who must load and unload the heavy film cans used to hold oversize 3-D reels.

An advantage of Fiberglas film cans and reels is reduced shipping charges. According to Claude Ezell, of the Drive-in Theatre Owners Association, exhibitors could save $10,000,000 annually if lighter cans were available. With acetate film now used almost universally, it is possible to redesign film containers, he suggests.

At the present time, a standard 35-mm film can weighs from 16 to 20 lbs., and the oversize cans used for 3-D reels weigh 25 lbs. or more. Constructed of Fiberglas, a standard-size film can would weigh about 6 lbs. and the oversize cans for 3-D reels would weigh from 11 to 12 lbs., it was estimated by Harry Greenman, manager of the Capitol Theatre, New York City, who is also interested in a company known as U. S. Fiberglass Industrial Plastics, Inc. The company has developed sample models of both Fiberglas cans and reels.

Fiberglas is a tough and durable as well as lightweight material produced from glass. It is a high-quality insulating material, resilient and having high tensile and impact strength. In many applications it is as strong as steel and weighs only half as much as aluminum.

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BOXOFFICE TV TESTED

(Continued from page 16)

register a wide variety of admission prices and also announce current and coming attractions to the customer in the home.

Out of 400 Palm Springs homes on the closed Tv circuit, about 75 are participating in the test. On the first day of the demonstration each customer was required to drop $1.35 in coins into the coin box to see "Forever Female." An afternoon show of the University of Southern California-Notre Dame game was priced at a dollar.

The "brain" of the coin box is a magnetic tape which flashes the amount required for each presentation onto a small window in the box and counts off the coins inserted until the fee is paid.

When a customer tunes into a Telemeter channel he sees only the blur of a "scrambled" image unless he pays the fee, but he will hear continuously the tape-recorded voice of an announcer or "barker" telling him what's on, how much it costs and whether the performance will be repeated and when. If the customer decides to buy and deposits the coins required, the picture unscrambles, the barker goes off the air so far as that set is concerned, and the proper sound and dialogue are automatically tuned in.

A slightly fantastic but potentially important feature of the system is the fact that a button can be installed on the coin box which will enable the home Tv audience to "talk back" to whoever is on the screen. What the button actually does is to enable the viewer to register "yes" and "no" answers to questions directed at him over Tv.

Magnetic Tape Used

The answers, recorded on magnetic tape in the coin box, would be picked up regularly by a serviceman who also removes money from the box. Presumably, the button arrangement would make possible the taking of straw votes over the air, and the giving of aptitude tests and exams. The viewer would not be able to cheat because the tape would record not only his answer but also the time it takes to arrive at it.

So far as the immediate practical side of the Telemeter system is concerned, opinion differed among observers who went to Palm Springs for the first day of the test. It was felt by some that "Forever Female" was not the best choice for starting the test. A comedy is enjoyed most with a large responsive audience rather than when being viewed by a few people at home. Also it was noted that Tv reproduction tended to blur or wash out detail in backgrounds and longshots.

While nearly everyone agreed that the Telemeter system held great promise for the future, it was also remarked that it would face enormous manpower and economic problems if used on a wide scale rather than a small test area. Large numbers of collectors, maintenance men, and bookkeepers would be required.

TV Sets Record

Production of television sets hit a new high of 3,824,236 units in the first half of 1953 according to a report issued by the Radioelectronics Television Manufacturers Association.

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Seasons Greetings to the Fellows in the projection Room

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NEW PROCESS SPLICING

(Continued from page 12)

ice long after they have become dull and ineffective in their ability to remove the binder between the emulsion and the film base.

"Sandpaper or emery cloth, while admittedly very effective, should not be used for scraping, because the grit particles will be picked up by oily film and carried into the roll. Such particles not only cause serious surface abrasion but may find their way into projector bearings."

For a final treatment after the blade has been used, Eastman Kodak also recommends a fine wire brush such as the one mentioned earlier in this article. A few sweeping strokes of this brush after scraping will give the desired dull surface even though the blade has not been too effective.

"Satisfactory splices demand careful scraping, which means complete removal of the emulsion and binder coatings. On certain types of color films where these coatings are on both sides of the film, scraping of each of the surfaces to be joined is required. In any case, the surface on the back of the section to be joined should be thoroughly clean. If the back surface contains only a slight film of oil, some difficulty will be encountered in obtaining successful splices. In many cases, this factor is overlooked and poor splices are falsely attributed to the particular cement used, the splicing equipment, or the film base itself.

"Sometimes it is helpful to roughen the back surface slightly where certain films seem to resist satisfactory splicing. Another effective technique is to apply a very small amount of cement to the back surface and to wipe it off immediately. This acts as a primer coating preliminary to the actual splicing operation, and aids in obtaining thorough adhesion of the two surfaces."

The Kodak instructions emphasize again that care must be taken to avoid excessive use of cement, and also that it is important to allow sufficient holding time under equalized pressure in the clamps. For triacetate safety film, about 10 to 15 seconds is recommended. It is also suggested that the spliced film be afterwards rubbed slightly with a cloth to seal the cut ends. The movement of the cloth should be across the film and never in a direction parallel to the length of the film.

"A good splice is actually a weld, one section of the film being partly dissolved into the other. It is important to bring the two surfaces under pressure as quickly as possible after application of the cement. If the left clamp of bench-top splicer is raised slightly when the cement is applied, a cleaner back surface will be obtained, since the cement will be then less likely to flow under the film. This will greatly reduce the possibility of distortion in the spliced area when the cement has dried."

Cements are now available, Kodak states, which will do a good job on both acetate and nitrate film bases if instructions are followed. Fresh cement should always be employed and used cement in bench bottles should be cleaned out regularly and filled with new cement.

"Poor splices attributed to the particular brand of cement being used, or the characteristics of the film, may in most cases be explained by lack of attention to details covered in the above paragraphs," Eastman Kodak concludes.

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PROJECTION IN EUROPE

(Continued from page 34)

arc-lamp, for when currents in the neighborhood of 100 amperes are employed, heat filters *must* be used, although very similar results can be effected, with a substantial saving in current and carbon costs, by reducing the arc current.

The truth of the matter is that visible light, especially the red end of the spectrum, is also heat producing. A filter which removes all of the invisible infrared and lets all of the visible light pass cannot possibly remove more than a fraction of the heat of the arc beam. Moreover, the size of the frames on 35-mm soundfilm is small, limiting the amount of light which the film can accept without buckling it out of shape and blistering the photographic emulsion. In general, arc amperages in excess of 85 or 90 amps. quickly ruin film and introduce flutter into the projected pictures. This flutter takes place so rapidly that it looks like an out-of-focus image on the screen.

Projection Lenses

However, for the process known in the United States as CinemaScope, in which a vast amount of light has to be poured on the screen, Ernemann has devised an ingenious lens arrangement. This is a little lens of heat-resistant glass mounted just behind the aperture. This lens decreases the spread of the light beam as it emerges from the aperture, thus insuring that all light passes through the central portion of the projection lens. This increases brilliance of the picture. Though the manufacturers don't say so, it also enables smaller (slower) lenses to be used with no attendant loss of light. As is well known, F/2.5 and F/3.0 lenses are much cheaper to make than the fast F/1.9 or the F/1.8 lenses of top quality and possess greater depth of focus and possibly better resolving power.

The projection lenses usually furnished by Ernemann dealers are the modern Zeiss Ikon Kinostar and Kipronar anastigmatic F:1.9 hard-coated lenses. In addition to these, which are furnished in a wide range of focal lengths, the Zeiss Alinar short-focus lenses, as well as the Meyer Trioplan and Busch Neokino objectives, are widely used in Europe. It is worth mentioning that the manufacturer claims that the bugbears of extremely short focus lenses have been expelled from the Alinar series, the performance of these lenses being equal to that of high-quality F/1.9 lenses of longer focal length.

It is of interest to note that antireflex-coated port glasses are widely used in Germany, to a far greater extent than in the United States, to increase the brilliance, contrast, and definition of the projected picture.

The lower film loop in German projectors is somewhat smaller than in American machines, and the film contacts a greater portion of the circumference of the intermittent sprocket. This construction has the advantage of decreasing side-sway of the picture, reducing the noise and instability of the lower loop, and lengthening the life of the film.

The next (January) article will discuss current European methods of sound reproduction, both optical and magnetic, and will also discuss projection lamps.

(TO BE CONTINUED)

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OBITUARIES

CHARLES KELLNER, 60, member of New York Local 306 and chief projectionist at RCA's Johnny Victor Theatre in New York City, died suddenly November 16 of a heart attack. Obligated by Local 306 in September, 1925, he had a long and interesting career in the projection field.

From 1929 to 1947 Kellner was chief projectionist at the RCA Studios, 411 Fifth Avenue, New York City, transferring to the Johnny Victor Theatre when it opened in April 1947.

He served as president of the Projectionists Square Club of Greater New York, was vice-president of the New York State Association of Masonic Square Clubs, and held membership in Dirigo Lodge, AF & FM. Surviving are his wife Rose, two daughthers and three grandchildren.

MAX HOLLANDER, retired member of Local 306, New York and of Stagehands Local No. 1 died November 22. He was over 70 and had been retired since 1944.

New Film in Three Languages

Not three dimensions but three languages was the feature of the first-run engagements for the "Little World of Don Camillo" in Washington, D.C. The picture opened in English at the Silver Spring Theatre, in French at the Plaza, and in Italian at the Little Theatre.

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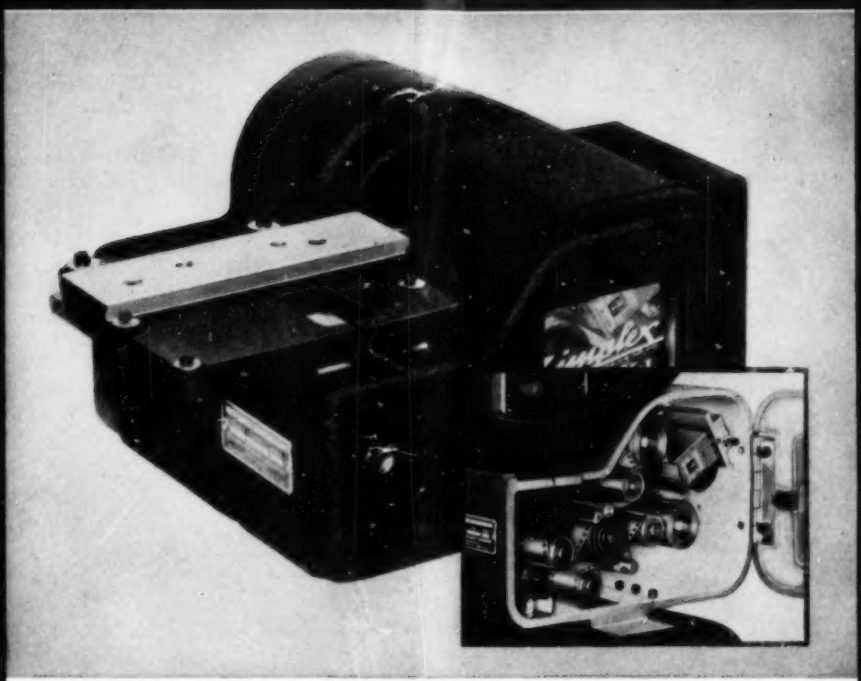

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